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WILDLIFE REVIEW

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UNITED STATES DEPARTMENT OF THE INTERIOR

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WILDLIFE REVIEW

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NOTICE: Beginning with this issue, Wildlife Review gives an abbreviated address for the author or senior author of a paper whenever possible. An author's institution usually is indicated. Full names and locations of colleges and universities are listed in the World Almanac and other publications. Full names and addresses of state game departments can be found in WR 72. Conservation Yearbook should also be a useful source of such addresses.

Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Buechner, Helmut K. (St. Coll. Wash.) SOME BIOTIC CHANGES IN THE STATE OF WASHINGTON, PARTICULARLY DURING THE CENTURY 1853-1953. Research Studies of the State College of Washington 21(2): 154-192. June 1953.
As the title indicates, the author discusses something of the geological and paleontological history of the state, but devotes most of his paper to changes wrought by white men. Many early records are cited, with special reference to conditions of game and vegetation. Tables list numerous plants and animals that have been introduced or altered in abundance or distribution. "...it is now extremely difficult to find remnants of natural communities." Sea otters should be reintroduced. Extirpation of the larger predators should be prevented. Refuges for the Steller sea lion and the Columbian white-tailed deer should be established. The bighorn herd may be built up. A single impoundment probably will eliminate 2 breeding birds from the state's list. Changes are certain to continue, and they should be scientifically directed to yield the greatest good.

Petersen, Eugene Thor. THE HISTORY OF WILD LIFE CONSERVATION IN MICHIGAN 1859-1921. Ph. D. thesis, University of Michigan. 342 p. 1953. [From abstract in Dissertation Abstracts 13(3).]

Van Brocklin, Ralph Merton. THE MOVEMENT FOR THE CONSERVATION OF NATURAL RESOURCES IN THE UNITED STATES BEFORE 1901. Ph. D. thesis, University of Michigan. 269 p. 1953. [From abstract in Dissertation Abstracts 13(3).]

WILDLIFE--EDUCATION

Barrett, John W. (St. U. of N. Y., Syracuse.) THE ROLE OF HUMANITIES AND OTHER LIBERAL COURSES IN THE PROFESSIONAL FORESTRY CURRICULUM. Journal of Forestry 51(8): 574-578. Aug. 1953.
Many of the conclusions should be directly applicable to wildlife work. The author surveyed a large sample of practicing foresters to find how their training had proved deficient, and in what order of importance they rated 57 subjects. They naturally rated various practical forestry courses highly, but the field considered of greatest importance was speaking and writing. They also thought that one of the forester's greatest deficiencies was in human relations--the ability to understand and get along with people--and in his knowledge of social sciences. Physical sciences and zoological subjects, including wildlife management, were rated as of low importance. The author recommends more courses in social sciences (in the broad sense), emphasis on speaking, writing, and human relations during training, and encouragement of extra-curricular activities.

WILDLIFE--BIOMETRICS

Goodman, L. A. POPULATION GROWTH OF THE SEXES. Biometrics 9(2): 212-225 p. June 1953.
Of value in sex and age ratio studies.--Vincent Schultz.

Hendricks, W. A. RESPONSE RATES AND SELECTIVITY IN MAIL SURVEYS. Biometrics 9(2): 265. June 1953.
Abstract of paper presented at ENAR Joint Meeting of The Biometric Society and The Institute of Mathematical Statistics, April 29-May 1, 1953.--Vincent Schultz.

Sturtevant, F. M., Jr., L. D. Calvin, and O. Park. THE ANALYSIS OF VARIATION IN A NATURAL POPULATION OF LADY BEETLES. Biometrics 9(2): 117-126. June 1953.
Of interest in the study of population variation.--Vincent Schultz.

WILDLIFE--ECONOMIC AND OTHER VALUES

Anonymous. MORE ABOUT "BIG BUSINESS." Monthly News Flash, Maryland Game and Inland Fish Commission, Issue 72. Pages unnumbered. July 1953.
"Hunting and fishing is a six billion dollar business, says U. S. Dept. of Commerce. 50% greater than total yearly drugstore sales. 136% greater than household appliances, radios, TV's combined. Equal to total retail sales of gasoline and service stations. 33 million Americans hunt and fish! 18,998,751 fishing licenses issued last year. 12½ million hunting licenses issued last year. $73,395,076 spent for tag fees alone. The Average U. S. Fisherman spends each year $310. The Average U. S. Hunter spends each year $306. If he does both $616. (Survey of readers by Outdoor Life) If newspaper Editors knew this, perhaps they would give more space in their publications to fishing and hunting and conservation." Copied complete.

White, William M. (US F&WS) ECONOMIC VALUE OF FISH AND WILDLIFE. Virginia Wildlife 14(6): 21-23, illus. June 1953.
The best known way to place a cash value on a fish or game animal is to estimate the average cost involved in bagging it. This method neglects vital intangibles, but it is objective and permits comparisons. On this basis, rough fish are valued at 65¢ a pound, trout at $4 a pound, a rabbit at $1.35, a moose at more than $300. Annual average expenditures by hunters have been estimated at $42 in Ohio, $51 in N. C., $100 in Montana and California, and $200 in Washington. Some figures for fishermen are also cited. If we assume an expenditure of $100 per license holder, "the total expenditures by hunters and fishermen in the United States would have been over $3,000,000,000 during the year ended June 30, 1952. This is probably a fairly good estimate..." Most of this money is spent at the retail level.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Hamilton, W. J., Jr. (Cornell U.) MIGRANTS AND EMIGRANTS. New York State Conservationist 7(6): 10-11, illus. June-July 1953.
Anecdotal discussion, including descriptions of recent gray squirrel and muskrat emigrations in the Northeast. Emigration, at least of gray squirrels, is attributed to crowding rather than food shortage.

Pogue, Ralph. WILDLIFE AND THE WEATHER. Missouri Wildlife 15(2): 4-5, 8, illus. April 1953.
Information from various authorities on ways in which fish and game animals react to changes in atmospheric pressure and other features of weather. Animal activity seems to be affected strongly by prevailing weather conditions and by conditions of the immediate future as indicated by barometric changes.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Edlin, H. L. THE CHANGING WILD LIFE OF BRITAIN. B. T. Batsford, London. viii + 184, illus. 1952. 21s. [From review by L. H. Matthews, Nature 171 (4356).]
"The dominating factor in the life of any wild animal in Britain to-day is its relations to man... About two-thirds of the book is devoted to the fauna, mainly the mammals and birds, and the rest to the flora. Four chapters are given to mammals: the deer, the carnivores, the rodents, and the semidomesticated cattle, sheep, goats, and ponies that have free range over some of the moors and mountains in Britain--the last a chapter of much interest. The probable origin of these animals, and of some of the domestic breeds, is discussed, and the enormous influence that sheep-grazing has had on the character of the British flora and fauna is emphasized. 'The implications to the naturalist are obvious—he will seek in vain for "natural" vegetation over most of the British Isles; what he will find will be sheep induced, or at least sheep influenced, vegetation.' The book admirably succeeds in its purpose of giving a survey of the endless changes wrought by man upon his surroundings."

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

Hamnett, William L., and David C. Thornton. (N. C. Wildlife Resources Comm.) TAR HEEL WILDLIFE. North Carolina Wildlife Resources Commission, Raleigh. 1-98 p., illus. 1953.

A large, useful, and attractive publication on the game and fur animals of North Carolina. It embodies the results of a state wildlife survey that was participated in by several workers, and is so written that it is valuable for educational and extension work. The text is interesting and the photographs are admirably reproduced. Range maps for many forms add to the work's value, as does a huge colored map of the state's vegetational areas. The first 17 pages contain good descriptions of the state's chief natural regions. The rest of the book consists of discussions of species (or groups) of birds and mammals that are hunted or trapped by man. Emphasis is on status, distribution, biological requirements, and management. Habits are discussed only in connection with the preceding topics. The more important species are discussed under headings such as the following: History, Present status, Population factors, Decimating factors, Welfare factors, Influences, and Future outlook.

Sumner, Lowell, and Joseph S. Dixon. BIRDS AND MAMMALS OF THE SIERRA NEVADA. University of California Press, Berkeley. 484 p., illus. 1953. $7.50. [From A.I.B.S. Bulletin 3(3).]

"This book is a guide to the birds and mammals of the Sierra Nevada region and contains information about their distribution. It will serve admirably as a handbook for the nonscientific visitor and as a useful manual for the professional zoologist. Valuable information is included on life histories, habitats, and distribution of the various species. Eight color plates, 46 black-and-white illustrations, a map showing the principal physical features of the region and a life-zone map add to the value of the book."

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Anonymous. HIGHWAYS TAKE HEAVY DEER TOLL. Washington State Game Bulletin 5(3): 8. July 1953.

Figures on known losses other than those to hunters in Washington, 1952. Highway kill, 844; illegal hunting, 301; malnutrition, 126; dogs, 75; drowning, 65; trains, 55; fences, 22; wild predators, 15; old bullet wounds, 10. Estimated total nonhunting loss in state is at least 25,000 annually.

Boswell, Victor R. (USDA, Beltsville, Md.) INSECTICIDES AND THE SOIL. Atlantic Naturalist 8(5): 246-251. May-Aug. 1953.

Some of the modern insecticides, especially DDT, accumulate in surface layers of soil and may injure certain crops. The danger is slim except in heavily treated agricultural areas. Benzene hexachloride (and its isomer, lindane) probably are the most generally toxic to higher plants and soil microflora. Effects vary with soil type.

Cook, Dave. (N. Y. Cons. Dept.) CHEMI-PEELING AND WILDLIFE. New York State Conservationist 7(6): 8, illus. June-July 1953.

Treatment of trees with sodium arsenite to make bark peel off is not dangerous to wildlife if done according to accepted methods. A few deer have been killed when the work was done otherwise.

Kitselman, C. H. (Manhattan, Kans.) LONG TERM STUDIES ON DOGS FED ALDRIN AND DIELDRIN IN SUBLETHAL DOSAGES, WITH REFERENCE TO THE HISTOPATHOLOGICAL FINDINGS AND REPRODUCTION. Journal of the American Veterinary Medical Association 123(916): 28-30. July 1953.

Paludan, Knud. GAME AND SOME POISONS USED IN FARMING (Vildtet og Landbrugets Giftstoffer). Danske Vildtundersøgelser, Hefte 1. 1-11 p. 1953.

In Danish, with English summary on loosely inserted sheet. The author determined the lethal dose for pheasants of: a hormone (4K 2M), dinitroorthocresol, dinitrobutylphenol, Parathion, and Paris Green. Pheasant lethal doses per square meter were computed on the basis of rates of application recommended for Denmark.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.--Continued

Animals penned on newly sprayed fields were not killed. Despite public appeals, no reliable proof was obtained of game killed by these agricultural chemicals in Denmark. Mortality reported from other countries is attributed to higher rates of application.

Steinke, Harold. (Wis. Cons. Dept.) THE AUTOMOBILE AS A PREDATOR OF WILDLIFE. Wisconsin Conservation Bulletin 18(7): 7-10. July 1953.
Records, by species and month, birds and mammals the author found killed by cars in certain Wisconsin counties, 1947-52. Chief victims were rabbits, song birds, squirrels, cats, and pheasants.

WILDLIFE--MANAGEMENT--GENERAL

Ford, Corey. IS ALASKA'S WILDLIFE DOOMED? PART III. Field and Stream 57(12): 63-65, 143-147, 155-156, illus. April 1953.
Parts I and II were reviewed in WR 73. This part describes aerial census of Dall sheep in the Brooks Range, and discusses the organization and operation of fish and wildlife work in the Territory. After talking to various Alaskans, the author believes that Alaska is not ready for statehood: most local people do not want it and could not pay the cost of it. The author also feels that wildlife problems at present are being handled well, but that they would become political footballs under statehood. Alaska is being opened up rapidly. Good management and public support will be necessary to perpetuate or improve the hunting and fishing.

Fraser, Fred. (Commission, Yukon Admin., Dawson.) WILDLIFE MANAGEMENT IN THE YUKON TERRITORY. Forestry Chronicle 29(2): 150-157. June 1953.
Wildlife management is relatively new in the Territory, but the registered trapline system has been begun, elk and bison have been introduced, and bounties have just been eliminated. Natives still kill too many caribou for their dogs and abuse trapping regulations, but education is having an effect. Caribou seem to be increasing, and feed conditions for big game are thought to be good. Tables show (by species) numbers of pelts and big game taken and numbers of coyotes and wolves bountied, 1948-51.

Groves, Frank W. (Nev. Game Comm.) PROBLEMS AND SUCCESS OF THE STATE AND FEDERAL COOPERATIVELY MANAGED STILLWATER WILDLIFE MANAGEMENT AREA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 188-197 p. 1953.
Details agreements between Nevada Fish and Game Commission, Fish and Wildlife Service, and the local irrigation district for development of a great marsh area. The agreements seemed sound and fair but grave difficulties developed in practice. Estimated costs greatly increased, some plans did not prove economically feasible, and changes of personnel caused confusion over unwritten understandings. The author urges very thorough preliminary investigations, written agreements on every point, and that, insofar as possible, each agency develop its own part of an area.

Leopold, A. Starker, et al. REPORT OF THE COMMITTEE ON RESEARCH NEEDS. Journal of Wildlife Management 17(3): 361-365. July 1953.
Deserves consideration of all concerned with the future of wildlife conservation. The Wildlife Society's Committee on Research Needs surveyed present research projects and found that the great bulk of them were of the short-term, practical type designed as immediate aids to management. These include checks on local range conditions and assembling of hunting statistics. Long-term, basic studies that might turn up important principles are being slighted, even in schools. We are acquiring details rather than understanding. The report urges that some investigations by each state be of long-term fundamental type, that schools place series of graduate students under competent guidance on certain selected problems, and that agencies place full-time research men in university stations. The report also points out that many projects fail because research men were not carefully selected.

WILDLIFE--MANAGEMENT--GENERAL--Continued

Mosby, Henry S. (Va. Polytechnic Inst.) IS WILDLIFE FACT-FINDING PAYING OFF? Virginia Wildlife 14(6): 18-20, illus. June 1953.
Examples of how it is paying off and why it is necessary.

PROCEEDINGS OF THE THIRTY-SECOND ANNUAL CONFERENCE OF WESTERN ASSOCIATION OF STATE GAME AND FISH COMMISSIONERS, Glacier National Park, Montana, June 15-17, 1952. xi + 252 p., maps and graphs. 1953. $2.00 from Ben Glading, Calif. Dept. of Fish and Game, 926 J St., Sacramento, Calif.
This paper-bound volume contains 48 consecutively paged papers on game, abstracts of papers of Western Division of American Fisheries Society, and resolutions. Papers of technical sessions are listed individually in this issue of WR. Papers of the general sessions are: President's address, by R. H. Lambeth. Progress in the conservation movement, by C. D. Shoemaker. Effective management of fish and game, by W. J. Silva. Sportsmen's clubs and their relation to the fish and game departments, by A. E. Riegel. A force for good game management--the outdoor writer, by Fred Peterson. Law enforcement in game management, by Walter Neubrech. River basin activities of the U. S. Fish and Wildlife Service, by Rudolph Dieffenbach. Who said the land grab is dead? by C. R. Gutermuth. The role of public relations in wildlife management, by J. C. Culbreath. A progress report on Dingell-Johnson activities, by Willis King. Flyway management from the state viewpoint, by J. B. Lauckhart. Flyway management from the viewpoint of the Fish and Wildlife Service, by A. M. Day.

Riley, Charles V. STRIPLANDS CAN PRODUCE WILDLIFE. Ohio Conservation Bulletin 17(6): 2-3, 30-31, illus. June 1953.
Studies of strip-mined land in Ohio and near-by states demonstrated that old, reclaimed striplands produced more cottontails than did agricultural and forest land, and more song birds than did abandoned or cultivated farmland. Strip lands were also favorable for many other forms of game mammals, game birds, fur-bearers, frogs, and fishes. Leveled or very acid striplands, of course, were less valuable to wildlife. With luck or good management, striplands can be extremely valuable conservation and recreation areas.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Anonymous. COMPARATIVE GAME HARVEST REPORT SHOWS INCREASED 1952-53 TAKE. Wisconsin Conservation Department, Activities Progress Report no. 57. p. 12. May 1952.
Estimated total kills of each type of game in Wisconsin, 1951-52 and 1952-53. Harvests of most game were higher in 1952-53, but decreases were registered for deer (27,630 in contrast to 129,663), bear, geese, sharp-tails, prairie chickens, jackrabbits, and snowshoe hares. Kill of woodcock rose from 18,284 to 31,990.

Holland, Ray P. CUBA SHOOTS. Sports Afield 129(4): 24-29, illus. April 1953.
The author believes that extremely liberal regulations and market hunting are reducing Cuban game bird populations and cutting U. S. and Canadian populations of migrant ducks. Success of a hunt is judged by number of birds bagged and huge bags are common. A party of 100 may shoot 4000 mourning doves in one hunt. Ducks and other migratory birds may be shot from Sept. 1 to March 31 with a daily bag per person of 50 birds. The legal daily bag of mourning doves is 50; for wild pigeons it is 75 or 100. Snipe are hunted with drives. The author urges treaty or other action by the U. S. to induce Cuba to adopt more realistic game regulations before it is too late.

Pennsylvania. 1952--DEER, BEAR AND TURKEY KILL. Pennsylvania Game News 24(8): back cover, illus. Aug. 1953.
Data by counties. Totals were 64,993 deer, 261 bears, and about 9,227 turkeys.

WILDLIFE--MANAGEMENT--FARM

Anonymous. BORDER CUTTINGS BENEFIT BOTH FARMER AND WILDLIFE. Pennsylvania Game News 24(6): 46. June 1953.
A simple, practical measure of farm and wildlife management is to cut all large trees in a strip 25-30 feet wide around a field. Crops at the edge of the field are better, and the shrubs and vines that naturally follow the trees benefit various forms of wildlife.

Casebeer, Robert L. (Idaho Game Dept.) UPLAND GAME BIRD HABITAT DEVELOPMENT IN IDAHO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 119-122 p. 1953.
The program is chiefly to furnish winter food and cover for pheasants. State crews install and care for the plots. Plots are grouped for ready maintenance rather than scattered over state. Owners of improved areas must permit some hunting, the amount varying with protection from hunters the state agrees to give them. Many of the plantings are designed as windbreaks and as such are welcomed by farmers. The state hopes to get cooperators to take over more of the planting and maintenance. Tested plants now used are listed.

Farley, John B., and Lyle J. Geissinger. SOUTH DAKOTA GAME COVER DEVELOPMENT. South Dakota Department of Game, Fish and Parks, Annual Progress Report, PR Project 19-D, Jan. 1, 1952--Dec. 31, 1952. 1-53 p. + 23 form sheets etc. Illus. 1953.
Detailed account of activities, with some information on problems and results. No summary.

Kemptar, Bud. (Izaak Walton League, Ravenna, Neb.) FLUSHING BAR REDUCES LOSS OF HENS, YOUNG. Outdoor Nebraska 31(3): 17, 23, illus. Summer 1953.
Describes new flushing bar that is easily detached from tractor. The bar is of ½-inch pipe and the flaps are of rubberized belting painted white. Blueprints are available to wildlife clubs.

Kinghorn, Glenn. (Colo. Game Dept.) WILDLIFE HABITAT DEVELOPMENT ON THE HIGH PLAINS OF COLORADO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 144-148 p. 1953.
Discusses installation and study of woody cover plots intended chiefly for pheasants. Some of these plots are relatively small, others are expanded into windbreaks for benefit of landholders. Farmers and ranchers are eager to have plantings and do much of the work. Soon the state may supply nothing but plans, plants, and loan of planting machines. The 6-year program calls for a 5-acre planting every 3 miles, with others around ponds and at other special spots. Sites are studied, including soil pH, so that adapted plants can be used. Strain selection of plants is important in winter hardiness and other reactions. "We believe that a three-row planting of low and medium-height shrubs and evergreens will provide almost as many wildlife values as a wider and larger planting..." Statistical studies of survival and wildlife values of plantings are being made by nurserymen and biologists.

Leaverton, Paul. (Iowa Cons. Comm.) USE OF A FLUSHING BAR MEANS BETTER HUNTING. Iowa Conservationist 12(6): 139, illus. June 1953.
The modern power mower is the pheasant's deadliest enemy. Use of the flushing bar developed by the Ohio Conservation Commission has shown that mortality of hens can be reduced 45%, mortality of chicks may be cut 70%, and deaths of young rabbits reduced almost 80%. This flushing bar is designed for use on tractors, is almost indestructible, is simple to make, and material for it costs only about $12.

WILDLIFE--MANAGEMENT--FARM--Continued

Nelson, Bernard A. (S. D. Dept. Game.) PHEASANT HABITAT IMPROVEMENT IN SOUTH DAKOTA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 123-126 p. 1953.
Describes program for providing winter cover of woody plants. Windbreaks averaging 7 acres and composed of many species are placed at 3-mile intervals. Farmers on the plains are anxious to have these plantings for their windbreak value. Total average cost runs about $42 per acre. Actual planting is done by the department or by contract with Soil Conservation Districts. Planting is by machine except for conifers, which do better when hand planted. It is estimated that these plantings will help pheasants through the winter at a cost of 30¢ per bird that would otherwise have been lost.

Warbach, Oscar. (Patuxent Refuge, Laurel, Md.) CONTROL OF JAPANESE HONEYSUCKLE IN WILDLIFE BORDERS. Journal of Wildlife Management 17(3): 301-304. July 1953.
"A herbicide applied during the winter and strong enough to kill dormant woody plants will stop the spread of honeysuckle from a woods edge for at least two years...A low-percentage 2,4-D water spray applied to honeysuckle growing in bicolor lespedeza borders at a time when honeysuckle is starting growth and bicolor is still dormant will selectively destroy the vine without injuring the border." The economics of these treatments will remain unknown until the value of a wildlife border can be determined.

WILDLIFE--MANAGEMENT--FOREST AND RANGE

Dalke, Paul D. (U. of Idaho.) YIELDS OF SEEDS AND MAST IN SECOND GROWTH HARDWOOD FOREST, SOUTHCENTRAL MISSOURI. Journal of Wildlife Management 17(3): 378-380. July 1953.
"In 1938, 22.8 per cent of the plots yielded no seeds or mast; in 1939, 44.9 per cent of the plots were bare of seeds. The yield of seeds in 1939 decreased by approximately 90 per cent from the 1938 figure. The tables summarize the data for the years 1938 and 1939." Tables show by species of tree or shrub: average number of seeds per mil-acre plot, average weight of fruit per acre, and percentage of seeds that were sound, wormy, undeveloped, or partly eaten.

Elder, James B. UTILIZATION OF MAN-MADE WATERHOLES BY WILDLIFE IN SOUTHERN ARIZONA. M. S. thesis, University of Arizona. 1-114 p. 1953.

Illige, Denis J. (Ariz. Game Comm.) GAME RANGE IMPROVEMENT PROCEDURES IN ARIZONA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 141-143 p. 1953.
Fourteen experimental plots of at least 50 acres have been fenced to exclude stock, or both stock and big game. Vegetation in enclosures is recovering, though areas used only by deer and elk are but little different from areas of unrestricted use. Other stock exclosures, of 40 acres or more, are used to help deer. Rain water catchments are promoting better deer distribution. Two reseeding efforts are described. Quail range has been improved with guzzlers in 100-foot fenced plots. Fenced and reseeded plots of 5 acres around guzzlers will be tried.

McDermott, P. J., Jr. (Idaho Game Dept.) A PROGRAM FOR BROWSE RESTORATION ON IDAHO'S BIG GAME WINTER RANGE. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 131-135 p. 1953.
Results of experimental plantings of bitterbrush, ladak alfalfa, balsam root, willow, and other plants. Results often were very poor, owing to weed competition, rodent disturbance, dryness of site, inadequate seedbed preparation, lack of good techniques for seed treatment and planting, and unknown factors. Apparently bitterbrush can best be established by planting rooted seedlings.

WILDLIFE--MANAGEMENT--FOREST AND RANGE--Continued

Petrides, G. A., Paul Parmalee, and J. E. Wood. (Mich. St. Coll.) ACORN PRODUCTION IN EAST TEXAS. Journal of Wildlife Management 17(3): 380-382. July 1953.

Data taken during summers of 1949-51. Acorns were counted on 25 twigs of each post oak or blackjack oak sampled. Results show great differences in production in consecutive years, moderate losses between early and late summer in 1950, poor production (and smaller trees) on poor soils, apparently better production when there was less rain during flowering period, and best production by isolated or large, dominant trees.

Shealy, Craig. PASTURE IMPROVEMENT AND WILDLIFE CONSERVATION. Florida Naturalist 26(2): 64-67. April 1953.

The improved pasture movement is just getting well under way in Florida, with less than 3% of the grazing land already altered. Now is the time for proper planning for wildlife. The author offers a number of suggestions as to how draining and burning should be handled in connection with this program.

Swift, Ernest. (Wis. Cons. Dept.) MODIFICATION OF FOREST PRACTICES IN THE LAKE STATES FOR WILDLIFE HABITAT BETTERMENT. Journal of Forestry 51(6): 440-443. June 1953.

Valuable review of methods by which forest and game management may be integrated without much loss to either interest.

Taber, Richard D. (U. of Calif.) GAME RANGE REVEGETATION IN CALIFORNIA BRUSHLANDS. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 136-140 p. 1953.

Tells of several ways in which brushlands are managed for game by specialized use of fire, usually followed by seeding in grass. Burning plans vary according to site conditions and type of game to be favored. Mixtures of grass and brush, rather than elimination of brush, is desired.

WILDLIFE--MANAGEMENT--WET-LAND

Cahoon, Willie G. (US F&WS, New Holland, N. C.) COMMERCIAL CARP REMOVAL AT LAKE MATTAMUSKEET, NORTH CAROLINA. Journal of Wildlife Management 17(3): 312-317. July 1953.

Removal of carp from this important waterfowl lake apparently reduced turbidity greatly, permitted large increase of waterfowl food plants, and improved conditions for game fish. Methods of removing and marketing carp are detailed, and figures are given on the increase of food plants.

Eggler, Willis A. (Tulane U.) THE USE OF 2,4-D IN THE CONTROL OF WATER HYACINTH AND ALLIGATOR WEED IN THE MISSISSIPPI DELTA, WITH CERTAIN ECOLOGICAL IMPLICATIONS. Ecology 34(2): 409-414. April 1953.

Report of tests of various concentrations in different environments. Water hyacinths were killed and sunk by treatment with 8 pounds per acre of the amine salt of 2,4-D. Follow-up treatment to get any survivors is recommended. Good duck foods came in following kill of hyacinth on 1 lake. Neither alligator weed nor Phragmites communis were eliminated by treatment described, although some valuable plants were. Alligator weed could be controlled (not eliminated) in deep waters by repeated treatments, but not in shallow waters and new soil. In some sites, treatment may have done more harm than good by reducing competition.

Martin, Alexander C. IMPROVING DUCK MARSHES BY WEED CONTROL. U. S. Fish and Wildlife Service, Circular 19. ii + 49 p., maps. June 1953.

Presents information designed to improve the food resources of the nation's shrinking waterfowl habitat. It sums up current knowledge on procedures in the new and rapidly growing field of wetland weed control. Water-level management, herbicides, mechanical methods and other ways of replacing weedy, low-grade marsh plants by useful ones are discussed. Detailed comment on control procedures, frequently accompanied by range maps, is given for 12 species or genera of herbaceous plants and 4 groups or species of woody plants. Control measures for submerged aquatics are discussed briefly.--A. C. Martin.

WILDLIFE--MANAGEMENT--PREDATION, CROP DAMAGE, AND CONTROL

Cadieux, Charles L. (N. D. Game Dept.) BOUNTY MONEY COMES FROM YOU! North Dakota Outdoors 15(12): 4-5, 8. June 1953.
Discusses the ineffectiveness and economic folly of bounties and gives examples. A questionnaire was sent to all state game departments. Ohio, Virginia, Florida, Texas, and Tennessee have stopped paying bounties because of failure and fraud. Several other departments would like to stop. Twenty-eight states reported that bounties do not reduce predator populations. Only Minnesota stated definitely that the bounty does reduce general predator populations. South Dakota felt that its coyote bounty was helpful. Arizona, Idaho, Washington and Oregon favored bounties only for pumas. The 2 million dollars or so spent annually for bounties in the U. S. could be put to far better use.

Errington, Paul L. (Iowa St. Coll.) A CLOSER LOOK AT THE KILLERS. Audubon Magazine 55(1): 12-15, 22-23, illus. Jan.-Feb. 1953. [Also in Virginia Wildlife 14(8).]
Well written popular article on predation, pointing out that predation is a perfectly normal part of nature's system, that it depends largely on availability, and that it tends to skim off population surpluses. The predators themselves, especially weasels, are much preyed upon, and their broods and litters dwindle just as do those of prey animals. Animals have territorial and other needs that tend to keep them spaced out. Emergencies and habitat deterioration also limit the numbers on an area; excess individuals must perish in some way. Once a prey population has been reduced to suitably low levels, it can live with remarkable security in the presence of many formidable predators. If losses to one predator are heavy, losses to others tend to diminish proportionately. Many other compensating mechanisms are at work, as when losses of early young are offset by late breeding and good survival. Compensation is not always complete, but it is far more important than often thought. "Let us do whatever needs to be done in [predator control] but, in so doing, let us weigh values and avoid senseless extremes."

Glasgow, J. P. THE EXTERMINATION OF ANIMAL POPULATIONS BY ARTIFICIAL PREDATION AND THE ESTIMATION OF POPULATIONS. Journal of Animal Ecology 22(1): 32-45, graph. May 1953.
After discussing the theoretical and historical background of artificial extermination of animal populations, the author describes work in which a natural population of tsetse flies was subjected to artificial predation. Numbers were reduced in the expected geometric series, but immigration prevented extermination. Population estimates from the predation study agreed well with independent estimates made by mark-and-release methods.

Thompson, Harry V. (Ministry of Agric. & Fisheries, Hook Rise, Tolworth, Surbiton, Surrey, England.) THE USE OF REPELLENTS FOR PREVENTING MAMMAL AND BIRD DAMAGE TO TREES AND SEED. Forestry Abstracts 14(2): 129-136. 1953. [Reprint no. 19. 1s. 6d.]
This brief but extensive survey of the literature (101 titles, many of them American, are cited) covers a wide range of repellent chemicals and devices and should be of reference value to all workers concerned with crop and forest protection. The paper discusses damage to forest and fruit trees by deer and rabbits, and damage to forest trees, fruit trees, and tree seed by small mammals and birds. The section on birds is less than a page, but outlines a number of approaches.

Utida, Syunro. (Kyotu U., Japan.) INTERSPECIFIC COMPETITION BETWEEN TWO SPECIES OF BEAN WEEVIL. Ecology 34(2): 301-307, graphs. April 1953.
Experimental study, with discussion of principles. When the 2 species competed, 1 was eliminated after several generations. When a parasitic wasp was introduced into the colonies, both weevils were much reduced in numbers but both continued to exist. The author concludes that in nature the abundance of an animal is governed more by its predators and parasites than by its competitors.

WILDLIFE--REPORTS OF ORGANIZATIONS

Alabama. DEPARTMENT OF CONSERVATION, STATE OF ALABAMA, REPORT FOR FISCAL YEAR OCTOBER 1, 1951-SEPTEMBER 30, 1952. Montgomery. 1-157 p., illus. [1953.]

Report of Division of Game and Fish gives information on status of all resident game and fur-bearing animals, and on kill of deer, turkey, and each species of fur-bearer. Research and development projects are listed. Projects of the Cooperative Wildlife Research Unit are described. Land-use trends are favoring deer and turkey but hurting quail and certain other forms. Heavy mast crop in 1951 aided several forms of game.

Oklahoma. BIENNIAL REPORT, JULY 1, 1950--JUNE 30, 1952, OKLAHOMA GAME AND FISH DEPARTMENT. 1-45 p., illus. [1953.]

Lists game management and public hunting areas; lists, by species, number of pelts marketed in Oklahoma; tells of work in deer and turkey restoration, and in improvement of farm game habitat; gives brief accounts of research projects and other game activities.

South Dakota. 43RD ANNUAL REPORT, DEPARTMENT OF GAME, FISH AND PARKS, JULY 1, 1951--JUNE 30, 1952. Pierre. 1-156 p., illus.

Report of Division of Wildlife Restoration (p. 138-156) includes sections on: deer problems; antelope management; unsuitability of elk as game animal for South Dakota; need of reducing mountain goat populations in Black Hills; studies of pheasant, waterfowl, grouse, turkey; and cover development program. Deer populations should be reduced in Black Hills and in agricultural areas by any-deer seasons. After long opposition, the public is coming to understand this. Pheasants are approaching a peak, but will not regain former numbers because cover has been lessened by intensified land use. Heavier harvest of cocks is desirable, but opposed by public. Closed seasons in certain counties did not help pheasant populations. Prairie grouse were increasing slightly, but were adversely affected by expanding agriculture. Their numbers depend largely on cover conditions, which are governed by weather as well as agriculture. Turkeys planted in Black Hills have increased to about 1000 and may be hunted in 1953. The cover development program aims at large shelterbelts designed as good winter shelter and distributed at 3-mile intervals. They are often placed at homesteads, where they benefit human residents as well as pheasants. Progress and problems of this program are discussed.

Texas. ANNUAL REPORT OF THE GAME & FISH COMMISSION FOR THE FISCAL YEAR 1951-1952. Austin. 1-43 p.

Concise statistical report that includes: brief descriptions of 24 PR projects; records of game transplants; hunting statistics for shooting preserves, tabulated by species and county; results of 3 projects of Cooperative Wildlife Unit; statement of numbers of coyotes, bobcats, and pumas killed; estimates by county of deer and turkey kill and revenue from [hunting?] leases.

Vermont. BIENNIAL REPORT OF THE VERMONT FISH AND GAME SERVICE, 1951-1952. Montpelier. 1-53 p., illus.

Deer kill, tabulated by cause of kill and by county; deer damage claims, by county, 1942-51; bear damage claims, similar tabulation; bobcat bounties, by county and month; deer weights, age groups, distribution of points; waterfowl hunter success, by species; figures on beaver catch; estimated catch of each fur species; good accounts of Federal Aid projects. These projects are: annual inventory, waterfowl habitat survey, wood duck box program, black duck nesting studies, waterfowl banding, waterfowl census and bag check, vegetation control studies, fur-bearer survey (most data on beaver), marsh development areas. Some points of interest are: Local mange epizootics have reduced high red fox populations. The black bear is the most eagerly sought large game animal. Legal authority is needed for reduction of overly large deer herds. Loss of young wood ducks increased greatly in years of low water levels. During low water levels, 40% of snapping turtles contained wood duck remains; during high levels, the figure dropped to 13%.

MAMMALS--GENERAL

Swenson, Lowell E. (U. of Colo. Mus.) A BAIT FOR SMALL MAMMALS. Journal of Mammalogy 34(1): 137. Feb. 1953.
The mixture described is easier to handle and withstands hot weather better. It consists of Roman meal, 1 lb.; beef suet, ground fine, 1 lb.; raisins, ground fine, 1 lb.; and peanut butter, 1 qt.

MAMMALS--FAUNAS AND MANUALS

Roberts, Austin. THE MAMMALS OF SOUTH AFRICA. Distributed by Central News Agency of South Africa. xlviii + 700 p., illus. 1951. 57s. 6d. [From review by H. W. Setzer, Journal of Mammalogy 34(1).]
A valuable, important, and well illustrated monograph. Area covered is from the Cunene and Zambesi rivers southward. The treatment includes keys, descriptions, comparisons, range statements, life history data, definition of some 26 geographic subregions, and a plea for protection of wildlife.

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES

Butler, L. (U. of Toronto.) THE NATURE OF CYCLES IN POPULATIONS OF CANADIAN MAMMALS. Canadian Journal of Zoology 31(3): 242-262, graphs and maps. June 1953.
Important study of cycles; based on fur returns and Elton's annual questionnaires on population changes. The author rejects Cole's suggestion that cycles are no more than random fluctuations because Cole's criterion of a peak is "impractical and misleading," and also on the strength of statistical analysis of data. Peaks do not appear in all parts of Canada at the same time. Peaks for most fur species first appear in northern parts of the prairie provinces and then spread west and east. "It is suggested that the causal agent of these cycles is the accumulation of favorable factors in good years, acting over most of the country on populations of different initial densities. Migration from the more favored areas will cause an upswing of the cycle over most of the range. Decrease, being largely density-dependent, will follow across the country in the same order." The author believes that animals move long distances from areas of increase, increasing breeding in new areas both by adding to the population and by creating hybrid vigor in temporarily isolated populations. Migration is also thought to act as a synchronizing agent, keeping different areas in phase, though with time lapse. Search for single factors governing cycles is deplored, for causes probably are many and complex, requiring the use of matrices for analysis. Differences in cyclic behavior of species are discussed. Hare, lynx, fox, fisher, coyote, and wolf cycle more or less together, as do muskrat and mink. The author suggests that this is because they are reacting to the same conditions rather than because of prey-predator dependence, but the evidence here is not wholly convincing.

MAMMALS--SHREWS, MOLES, BATS

Rudd, Robert L. (MVZ, U. of Calif. at Berkeley.) NOTES ON MAINTENANCE AND BEHAVIOR OF SHREWS IN CAPTIVITY. Journal of Mammalogy 34(1): 118-120. Feb. 1953.

York, Norman. GUIDE FOR BAT BATTLERS. Pest Control 21(6): 38-39. June 1953.
Bats in buildings can be repelled with napthalene or paradichlorobenzene. The building can be bat-proofed. Tracking powders of 100% ANTU or 50% DDT have given good results when applied along entry ways. As a last resort, the building can be fumigated with cyanide.

MAMMALS--RABBITS AND PIKAS

Andersen, Johs. A REPELLENT PROTECTING FRUIT-TREES AGAINST ATTACKS FROM HARES (HARER OG FRUGTTRAEER). Viltbiologisk Station (Kalö pr. Rönde, Denmark), Meddelelse no. 1. 1-12 p., illus. Dec. 1950.

Much damage to young fruit trees, especially apple trees, by European hares, which are important game animals in Denmark, led to tests of repellents. One of these, "Lepidan 51," gave almost complete protection all winter and did no harm to trees. "It must be sprayed or smeared on the trees in absolutely dry weather as it cannot stand water till it is--within a few hours--quite dry on the trees. The repellent is frostproof. Green parts of plants cannot stand spraying with the repellent, so it is not possible to use it on for example conifers." Constituents of "Lepidan 51" apparently are not stated. In Danish, with English summary.

Andersen, Johs. ON THE MOVEMENTS OF MARKED EUROPEAN HARES (LEPUS EUROPAEUS) IN DENMARK (HVORMEGET VANDRER HAREN?). Vildtbiologisk Station (Kalö pr. Rönde, Denmark), Meddelelse no. 5. 1-7 p., illus. Aug. 1951.

Marked hares were released in strange areas. 57 were recovered. Average distance traveled was 1.4 km., and 90% of the hares remained within a radius of 3 km., though 1 traveled 12-13 km. Travels were greater on one island. In Danish, with English summary.

Andersen, Johs. DO MALE AND FEMALE HARES (LEPUS EUROPAEUS) BEHAVE DIFFERENTLY? (Saetter og Ramler). Vildtbiologisk Station (Kalö pr. Rönde, Denmark), Meddelelse no. 10. 1-8 p. April 1953.

Controlled hunting gave no evidence that the sexes react differently to certain types of hunting, or that they carry ears and tails differently. In Danish, with English summary.

Atzenhoefer, Dan. RABBIT NESTS ARE DEATH TRAPS...SOMETIMES! Ohio Conservation Bulletin 17(6): 10-11. June 1953.

Young rabbits in their sunken nests are subject to drowning, burning, predation, and farm operations. Figures are given on losses from different causes as determined in a 5-year study in Ohio. Only 38.4% of 370 nests were successful. A late, wet spring can have marked effects on the population.

Chapman, Floyd B. (392 Walhalla Rd., Columbus 2, Ohio.) GHOST RABBITS. Ohio Conservation Bulletin 17(7): 6-7, 32, illus. July 1953.

Popular account of reintroduction of snowshoe hares into New Lyme Wildlife Area, Ashtabula Co., Ohio, on Feb. 21, 1953. Hares from New Brunswick were tagged and released in apparently favorable habitat.

Lines, E. W. L. HISTORY OF EPIZOOTICS OF MYXOMATOSIS IN RABBITS OF S. A. DURING 1951-52. Jour. Dept. Agr. So. Austral. 56: 232-238. Dec. 1952. [From Journal of Range Management 6(4).]

MAMMALS--RODENTS--MISCELLANEOUS

Atkinson, Laurel L. (Calif. Dept. Agr.) RODENT CONTROL. 33rd Annual Report, California Department of Agriculture. In The Bulletin 41(4): 285-292, illus. Oct.-Dec. 1952.

In addition to data on status and control of various pest mammals, this report tells of experiments in which meadow mice in alfalfa were controlled satisfactorily by spraying 2 quarts of 70% Toxaphene per acre (about 4 pounds of Toxaphene per acre).

Howard, Walter E. (U. of Calif. at Davis.) TESTS OF POCKET GOPHERS GNAWING ELECTRIC CABLES. Journal of Wildlife Management 17(3): 296-300, illus. July 1953.

Laboratory trials revealed that the following coverings would protect cables from gopher attack: steel armor, aluminum basket weave, and hardware-cloth of 1/4- or 1/8-inch mesh. Factors involved are discussed.

MAMMALS--RODENTS--MISCELLANEOUS--Continued

James, Wm. B., and Ernest S. Booth. BIOLOGY AND LIFE HISTORY OF THE SAGEBRUSH VOLE. Walla Walla College Publications of Biological Sciences and the Biological Station 1(2): 23-43. July 1952. [From highly critical review by M. L. Johnson in Murrelet 34(1).]

"This is a recounting of field and laboratory experiences with Lagurus curtatus pauperrimus. The study appears to be well organized and some valuable information is presented...The portions of the paper concerned with observations of captive mice are probably most important."

Jameson, E. W., Jr. (U. of Calif. at Davis.) REPRODUCTION OF DEER MICE (PEROMYSCUS MANICULATUS AND P. BOYLEI) IN THE SIERRA NEVADA, CALIFORNIA. Journal of Mammalogy 34(1): 44-58, graphs. Feb. 1953.

Study made of 1546 P. maniculatus and 830 P. boylei kill-trapped from Oct. 1948 to Aug. 1951. Topics include relation of sexual maturity to weight and age; variation and significance of perforation of vulva; relation of ovulation and litter size to season; post-partum pregnancies; population changes in 2 habitats. "There is a clear correlation between the amounts of mast and reproductive activity for the autumns of 1948, 1949, and 1950; and it is reasonable to believe that food is a basic determinant of the autumn reproduction of these mice." A population decline is attributed solely to decrease in reproduction. "If the decline was actually the result of a reproductive lull in the late summer and autumn of 1950, it would seem that these rodents must produce some young in the fall months in order to sustain a high population." It is suggested that forest reseeding be confined to years in which deer mice have not bred in the late summer and fall months.

Liu, Tsu-Tung. PRENATAL MORTALITY IN THE DEER MOUSE, PEROMYSCUS, WITH SPECIAL REFERENCE TO ITS BEARING ON REDUCED FERTILITY IN SOME INTERSPECIFIC AND INTERSUBSPECIFIC CROSSES. Ph. D. thesis, University of Michigan. 64 p. 1953. [From abstract in Dissertation Abstracts 13(3).]

Morrison, A. E. THE MEADOW MOUSE (MICROTUS CALIFORNICUS) PROBLEM IN SACRAMENTO COUNTY. California Department of Agriculture, Bulletin 42(2): 59-62. April-June 1953.

Describes crop damage and successful reduction of populations with Toxaphene spray. Aerial application of 4 pounds of Toxaphene in 10 gallons of water per acre gave better control than poisoned baits, but cost was a little higher. Some dead fish but no dead birds were found, although some birds were eating dying mice. Alfalfa was crop treated. Alfalfa should be 4-6 inches high at time of treatment, which should be after a period of extended rains, but at least 3 weeks before cutting for hay. Peculiarly, this method works in the field but not in the laboratory.

Quay, W. B. (U. of Mich.) SEASONAL AND SEXUAL DIFFERENCES IN THE DORSAL SKIN GLAND OF THE KANGAROO RAT (DIPODOMYS). Journal of Mammalogy 34(1): 1-14, graphs. Feb. 1953.

Sealander, John A., Jr. (U. Ark.) BODY TEMPERATURES OF WHITE-FOOTED MICE IN RELATION TO ENVIRONMENTAL TEMPERATURE AND HEAT AND COLD STRESS. Biological Bulletin 104(1): 87-99, graph. Feb. 1953.

York, Harlan H. (Ala. Dept. Cons.) THE POCKET GOPHER IN ALABAMA. Alabama Conservation 24(6): 7, 25, illus. May-June 1953.

Record of Geomys tuza destroying young longleaf pines in a plantation.

MAMMALS--HOUSE RATS AND MICE

Brown, Robert Zanes. (U. S. Public Health Service, Atlanta, Ga.) SOCIAL BEHAVIOR, REPRODUCTION, AND POPULATION CHANGES IN THE HOUSE MOUSE (MUS MUSCULUS L.). Ecological Monographs 23(3): 217-240, graphs. July 1953.

Live trapping in a barn, monthly for 2 years, showed population peaks in early spring and fall, apparently correlated with food supply. Significance is shown by a more sensitive statistical method than usually employed. Sex and age ratios, disappearance rates, and home range data are included. In caged populations, social hierarchies were established and maintained chiefly by fighting. Nest destruction by other mice decreased successful weaning of litters.--L. F. Stickel.

Crabtree, D. Glen, and William H. Robinson. (US F&WS, Denver 2, Colo.) PIVALYL, THE NEW INSECTICIDAL RODENTICIDE. Pest Control 21(7): 22, 24, 58. July 1953.

Warfarin baits prepared with cereal frequently become infested with insects. Pivalyl was developed to kill both rodents and insects. Water solutions of it are very stable and resistant to mold. Like Warfarin, it is an anticoagulant and is used at very low concentrations. In large-scale field tests in the South, cereal baits with 0.025% Pivalyl effectively controlled Norway rats, roof rats, and house mice. The baits did not become moldy and only 2% of them revealed any signs of insect infestation. Pivalyl (sodium salt) in water at a concentration of 0.005% shows promise of becoming a valuable medium for control of commensal rodents.

Deen, Robert B. (US F&WS., St. Coll., Miss.) EXPERIMENTAL AREA-WIDE RAT CONTROL WITH PERMANENT FEEDER STATIONS. Pest Control 21(7): 27-28, illus. July 1953.

Warfarin and Pival stations were placed at numerous sites in several small towns in Louisiana and Mississippi. Control was good and residual populations had no chance to build up. Cost data are tabulated. Once the program has been established, costs are less than for annual poisoning campaigns.

Strecker, Robert L., and John T. Emlen, Jr. (Miami U., Ohio.) REGULATORY MECHANISMS IN HOUSE-MOUSE POPULATIONS: THE EFFECT OF LIMITED FOOD SUPPLY ON A CONFINED POPULATION. Ecology 34(2): 375-385, illus. April 1953.

Experimental studies in mouse-proof enclosures, with cover and water in excess but food supply limited, showed a discontinuance of population growth owing to cessation of reproduction. Involution of female reproductive organs appeared. The abruptness with which reproduction stopped suggested that some factor such as social disturbance may have served as a trigger mechanism. Cold had a retarding, but not a completely suppressive effect on reproduction in enclosures where food was supplied in excess.--L. F. Stickel.

MAMMALS--SCIURIDS

Dearden, Lyle C. (U. of Mass.) THE GROSS ANATOMY OF THE VISCERA OF THE PRAIRIE DOG. Journal of Mammalogy 34(1): 15-27, illus. Feb. 1953.

Mansueti, Romeo. (Dept. of Research & Ed., Solomons, Md.) COMMENTS ON THE FOX SQUIRRELS OF MARYLAND. Maryland Naturalist 22(3-4): 30-41, illus. 1952. [1953.]

S. n. neglectus still occurs on the Delmarva Peninsula in small numbers, S. n. vicinus occurs sparsely at a few localities west of Chesapeake Bay, and S. n. rufiventer possibly occurs in extreme western Maryland. The status of all forms is precarious but little known. Hunters' reports are unreliable because of confusion of common names. This paper brings together what is known of these squirrels in the state, with locality lists, maps, and discussions of taxonomy, status, and habits. The big, gray, distinctive neglectus (bryanti) now occurs only on the Delmarva Peninsula.

MAMMALS--SCIURIDS--Continued

Mullally, Don P. (U. of Calif. at Los Angeles.) HIBERNATION IN THE GOLDEN-MANTLED GROUND SQUIRREL, CITELLUS LATERALIS BERNARDINUS. Journal of Mammalogy 34(1): 65-73, graph. Feb. 1953.
Summarizes the ecology of this animal and describes experimental study of hibernation.

Shorten, Monica. (U. of Oxford, Eng.) NOTES ON THE DISTRIBUTION OF THE GREY SQUIRREL (SCIURUS CAROLINENSIS) AND THE RED SQUIRREL (SCIURUS VULGARIS LEUCOURUS) IN ENGLAND AND WALES FROM 1945 TO 1952. Journal of Animal Ecology 22(1): 134-140, maps. May 1953.
The American gray squirrel is still spreading in the British Isles and the native red squirrel is being reduced or locally exterminated in consequence.

Wagar, J. V. K. (Colo. A. & M. Coll.) PRAIRIE DOGS: JUST PESTS? Colorado Conservation 2(4): 6-8, illus. July-Aug. 1953.
Studies of black-tailed prairie dogs on plains near Fort Collins, Colorado, revealed that there were 19 times as many cottontails in prairie dog towns as in areas that were similar except for the lack of prairie dog towns. The author concludes that "in this game management business, once a man takes on the job of caring for some of his wild relatives, he learns that sooner or later he has to be thinking about room and board for the whole outfit."

MAMMALS--BEAVER

Osborn, Dale J. (Boston U.) AGE CLASSES, REPRODUCTION, AND SEX RATIOS OF WYOMING BEAVER. Journal of Mammalogy 34(1): 27-44, illus. Feb. 1953.
Contains much detailed information on subjects mentioned in title. Some of the author's findings do not agree with those of previous workers.

Rudersdorf, Ward J. THE COACTIONS OF BEAVER AND MOOSE ON A JOINT FOOD SUPPLY IN THE BUFFALO RIVER MEADOWS AND SURROUNDING AREA IN JACKSON HOLE, WYOMING. M. S. thesis, Utah State Agricultural College. 1953.

Stenlund, Milton H. (Minn. Game Div.) REPORT OF MINNESOTA BEAVER DIE-OFF, 1951-1952. Journal of Wildlife Management 17(3): 376-377. July 1953.
Many beaver died during the winter, probably as many as were trapped. Some whole colonies were wiped out, others were not affected. The disease was widespread. Tularemia was diagnosed in some of the victims. Hundreds of muskrats reportedly died of tularemia in the fall of 1951, and several trappers contracted the disease.

MAMMALS--MUSKRAT AND NUTRIA

Byrd, Mitchell A. (Va. Polytechnic Inst.) HIGH OCCURRENCE OF TAENIA TAENIAFORMIS IN THE MUSKRAT. Journal of Wildlife Management 17(3): 384-385. July 1953.
Montgomery Co., Va. The cysts apparently did no harm.

MAMMALS--FURBEARERS--GENERAL

Oregon. FUR CATCH REPORT, 1952-53 SEASON. Oregon State Game Commission Bulletin 8(7): 6. July 1953.
Lists catch by species and county, showing number caught, average price, and total value.

Thomas, Earl M. (Wyo. Game Comm.) THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 17(7): 24-28, illus. July 1953.
Seventeenth installment. Notes on habits and status of cougar and wolf. The cougar is said to be rare, the wolf exterminated in Wyoming. Apparently the author was unfamiliar with the Young and Goldman books on these animals, for they are not listed among the references, and material on cougar classification is taken from Anthony (1928).

MAMMALS--BEARS

Anonymous. OUR BEARS NEED A BREAK. Michigan Out-of-Doors 2(9): 14-17, illus. Feb. 1952.
In all of Michigan's northern peninsula and in parts of the southern peninsula, bears can be shot or trapped at any time. Each county can choose whether to have bears protected except during deer seasons, or unprotected. Bears are the state's most prized trophies, and they are a tourist attraction. Bear hunting is a fine sport. The author believes that bears should be killed only in season, except for individuals that are doing actual damage.

Davenport, Leslie B., Jr. (U. of Ga.) AGRICULTURAL DEPREDATION BY THE BLACK BEAR IN VIRGINIA. Journal of Wildlife Management 17(3): 331-340, illus. July 1953.
Distribution and abundance in state (map), habits in damaging corn and killing livestock, economics of losses to bears. The state's bear population of about 1500 is restricted to the Dismal Swamp and western mountains. Swamp bears do about $2000 worth of damage to corn annually and take a few pigs. Mountains bears kill stock, usually sheep, to the extent of $2,232 annually. Stock killers are almost always old males, and should be disposed of individually. Several counties pay for bear damage from bear-deer damage funds provided by big-game hunters.

MAMMALS--RACCOON AND RINGTAIL

Clarke, Ira D., and Frank G. Ashbrook. (E. Regional Research Lab., Philadelphia 18, Pa.) A TEST OF RACCOON SKINS FOR SUEDE LEATHER. Journal of the American Leather Chemists Association 48(5): 294-299. May 1953.
Since long-haired furs are a drug on the market, possible leather and felt values were explored. About 500 skins from Louisiana and Arkansas were tanned as suede leather and tested. Tables give data on grades, weight, areas, thickness, other physical properties, and chemical composition. No market for the leathers could be found that would even pay for the tanning. No other type of leather treatment seemed promising at all, for reasons discussed. The hair would be worth a dollar a pound for making felt, but the hair from one animal would be worth only 6¢ and the leather would be destroyed.

Dorney, Robert S. (Wis. Cons. Dept.) SOME UNUSUAL JUVENILE RACCOON WEIGHTS. Journal of Mammalogy 34(1): 122-123. Feb. 1953.
Some exceptionally heavy and exceptionally light juvenile raccoons were trapped at the Horicon Marsh, Wisconsin, in 1950-51. "Whether the cold spring weather in 1950 decreased raccoon mobility and thus decreased the normal amount of early conception is unknown. If such was the case, late litter production should have been widespread along much of the northern edge of the range of the raccoon in the lake states. Since the survival of small raccoon pups in the severe winter of 1950-51 must have been very low, it is possible that widespread late breeding could lead to a noticeable reduction in the raccoon population." Difficulties with late litters might limit the northern distribution of the raccoon.

Kellner, William C. FACTORS INFLUENCING THE RACCOON AND ITS MANAGEMENT IN SOUTHWESTERN VIRGINIA. M. S. thesis, Virginia Polytechnic Institute. 1953.

Llewellyn, Leonard M. (Patuxent Refuge, Laurel, Md.) GROWTH RATE OF THE RACCOON FETUS. Journal of Wildlife Management 17(3): 320-321, graph. July 1953.
A pregnant female of known mating date was opened and her embryos were measured at 3 stages of growth. These and other young were also measured at birth. The resultant growth curve makes it possible to estimate age of embryos and date of mating from size of a group of embryos.

McNeil, Charles W., and Joanna T. Krogsdale. (St. Coll. Wash.) PARASITES OF RACCOONS IN SOUTHWEST WASHINGTON. Journal of Mammalogy 34(1): 123-124. Feb. 1953.

MAMMALS--MUSTELIDS

Ognev, S. I. (Translated by V. O. Pahn, edited by V. B. Scheffer.) Section on sea otter from THE MAMMALS OF EASTERN EUROPE AND NORTHERN ASIA. State Publishing House, Moscow and Leningrad. Vol. 2: 530-541, 548-552, 593. 1931. [Typewritten translation in Department of Interior Library, Washington 25, D.C.]
Gives many skull measurements and other descriptive data; presents account of early exploitation, life history, and status as reported by Russian observers.

Shadle, Albert R. (U. of Buffalo.) CAPTIVE STRIPED SKUNK PRODUCES TWO LITTERS. Journal of Wildlife Management 17(3): 388-389. July 1953.
"This case demonstrates that a skunk losing her litter early may experience another period of rut, a second copulatory period, and may have a second litter late the same season."

Wright, Philip L. (Mont. St. C.) INTERGRADATION BETWEEN MARTES AMERICANA AND MARTES CAURINA IN WESTERN MONTANA. Journal of Mammalogy 34(1): 74-86, illus. Feb. 1953.
Author's summary: "Skulls and skins of marten from various regions in northwestern Montana and central and northern Idaho have been studied. Statistical analysis of cranial characters has been undertaken and variation in the pelage described. Martes americana abietinoides and Martes caurina caurina intergrade in the Swan, South Fork of the Flathead, and Sun rivers region of western Montana. Accordingly the latter form and other races of caurina are classified as subspecies of americana."

MAMMALS--DOGS, WOLVES, FOXES

Anonymous. COYOTES PROTECTED. Oklahoma Game and Fish News 9(7-8): 9. July-August 1953.
Reproduced completely and without comment: "An upset in Nature's balance has brought the much-hunted coyote a break in Colorado. Forty ranchers, forming the Toponas Grassland Protective Association, have posted around 40,000 acres of land they own or control against hunting, trapping or poisoning of coyotes. The ranchers complain that the destruction of coyotes through eradication campaigns has so greatly reduced their numbers that ranches are now overrun by rodents, especially field mice and jackrabbits, on which the coyotes feed."

Ferrel, Carol M., Howard R. Leach, and Daniel F. Tillotson. (Calif. Dept. Game.) FOOD HABITS OF THE COYOTE IN CALIFORNIA. California Fish and Game 39(3): 301-341, maps and graphs. July 1953.
Contents of 2,222 stomachs were thoroughly analyzed and the results were tabulated in terms of frequency of occurrence and percent by volume. Data are presented by seasons both for the whole state and for its major regions. "Rodents were the most important source of food and, together with rabbits, made up nearly half of the total volume of prey consumed. Other important items in the diet were remains of domestic livestock and deer. Miscellaneous items including insects, reptiles, carnivores, insectivores, and unidentified materials were taken in varying amounts. Birds contributed less than 5 percent of the total food and much of this was other than game species. Plant foods were of least importance to the coyote's fare. California coyotes were found to be 96 percent carnivorous and 4 percent herbivorous." An unknown amount of the livestock and deer material was taken as carrion.

Presnall, Clifford C., and Alvin Wood. (US F&WS.) COYOTE PREDATION ON SAGE GROUSE. Journal of Mammalogy 34(1): 127. Feb. 1953.
A female and her 7 pups apparently were living largely on sage grouse.

Presnall, Clifford C. (US F&WS.) COYOTES CAN'T WIN AGAINST RODENTS. National Wool Grower 43(6): 22-23, illus. June 1953.
The author maintains that coyotes do not and cannot control rabbit and rodent populations. Rodents and rabbits simply outbreed coyotes; it takes all kinds of predators together to have a real restraining influence. "Subtraction of one predator, the coyote, from the long list of rodent enemies

MAMMALS--DOGS, WOLVES, FOXES--Continued

has so little effect upon rodent or rabbit populations that scientists have been unable to measure it accurately. Hawks and owls, on the other hand, eat a much larger proportion of the annual rodent and rabbit population and their effects, while slight in comparison to weather, food and disease, are large enough to measure." Instances are given of prey populations reaching high levels, or fluctuating, despite high coyote populations.

Richards, Stephen H., and Ruth L. Hine. (Wis. Cons. Dept.) WISCONSIN FOX POPULATIONS. Wisconsin Conservation Department, Technical Wildlife Bulletin no. 6. 1-78 p., illus. 1953.

Detailed report of important study of biology of red and gray foxes and effect of bounties. Life history is reviewed and analyses are presented of population fluctuations and factors affecting them, reproduction and reproductive potential, food habits, relation of fox populations to prey populations, and relative merits of various control systems. Data are also presented on sex and age ratios, weights, rabies, and a local, unidentified epizootic. A population peak, chiefly of grays, occurred in 1935-36, and another, chiefly of reds, in 1944-45. Incidence of rabies was low in these periods. Since 1944-45, reds have remained at a relatively high, stable level. Increase of reds apparently accompanied greater weights of females and larger litters. Foxes can increase nearly as fast as upland game birds. A take of 75% would be needed to reduce their populations; the present take (with bounties) does no more than skim the surplus. Fluctuations have been independent of trends in pelt price and bounty payments. In other words, an abundance of foxes seems to be the main incentive for the harvest of foxes--not a monetary stimulus. Bounties, now costing state and counties about $100,000 annually, are not reducing fox numbers; they merely cause a somewhat higher kill. Foxes eat many game animals, but they do not control their numbers; game populations fluctuate independently of fox populations. The bounty in its present form cannot be justified on wildlife grounds.

Sheldon, William G. (U. of Mass.) RETURNS ON BANDED RED AND GRAY FOXES IN NEW YORK STATE. Journal of Mammalogy 34(1): 125. Feb. 1953.

New records for 6 reds and 2 grays.

MAMMALS--CATS

Parmalee, Paul W. (Ill. St. Mus., Springfield.) FOOD HABITS OF THE FERAL HOUSE CAT IN EAST-CENTRAL TEXAS. Journal of Wildlife Management 17(3): 375-376. July 1953.

Contents of 31 stomachs. Rodents, especially cotton rats, were chief foods. Quail remains were found in 1 stomach.

Thomas, Earl M. (Wyo. Game Dept.) THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 17(5): 12-16, illus. May 1953.

Fifteenth installment. Review of habits and biology of lynx. The lynx has no legal protection in Wyoming and is fairly rare. Present pelt price is $2 to $5.

Thomas, Earl M. (Wyo. Game Comm.) THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 17(6): 10-13, illus. June 1953.

Sixteenth installment, a review of habits and biology of bobcat. The species is holding its own or increasing in some parts of Wyoming despite predator control.

Wright, Bruce S. (Fredericton, N. B.) FURTHER NOTES ON THE PANTHER IN THE NORTHEAST. Canadian Field-Naturalist 67(1): 12-28, illus. Jan.-Mar. 1953.

Reports of pumas in the Northeast were investigated and valid ones were analyzed for information on appearance, foods, and behavior. There are more than 100 acceptable records for New Brunswick, Nova Scotia, and Maine. There are recent reports from Vermont, New Hampshire, Massachusetts, and New York. The species seems to be on the increase, thanks to high deer populations. The author considers it less dangerous to man than the black bear, but describes 2 recent attacks, 1 perhaps accidental, the other possibly by a rabid puma.

MAMMALS--BIG GAME--GENERAL

Anonymous. DEER AND ELK KILL--1952 SEASON. Washington State Game Bulletin 5(3): 9. July 1953.
Tabulation by counties, Washington.

Hanscum, Charles W. (Wyo. Game Comm.) GAME-LIVESTOCK RELATIONSHIPS IN WYOMING. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 92-94 p. 1953.
Describes methods used in state to reduce crop damage by big game and to reimburse landowners for losses.

Mace, R. U. (Ore. Game Comm.) BIG GAME REVIEW. Oregon State Game Commission Bulletin 8(6): 3-4, 6-7. June 1953.
Discusses 1952 hunts for and populations of deer, elk, and antelope. Tables give hunting statistics, by county, for deer and elk. Deer and elk populations are holding up well, and are too high in some regions, so 1953 regulations should be at least as liberal as those of 1952. Antelope are declining, apparently because of high kid mortality of unknown cause. Total 1952 kill was 77,659 deer, 3,333 elk, and 448 antelope bucks.

McDowell, Lloyd E., and Dwight S. Stockstad. (Mont. Game Dept.) NEW TECHNIQUES IN HANDLING BIG GAME PRORLEMS IN MONTANA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 210-213 p. 1953.
A portable trap for small bands of nuisance elk is described. Mountain goats can be trapped best at mineral licks. Tests of mineral preferences show that goats prefer sodium compounds. Trapped goats are protected from shock death (which occurs when heat is over 80°F.) by specialized drug injections; are transported in light cages of airplane tubing by horse, light cart, and airplane; and are marked with red plastic ear tags as well as metal ear tags. Tagged animals should make it possible to determine travels and to estimate populations. Tagged kids collected later will make possible a system of determining age from teeth; a start on this has been made.

Rogers, Glenn E. (Colo. Game Dept.) FUNCTION AND OPERATION OF BIG-GAME CHECK STATIONS IN COLORADO. Journal of Wildlife Management 17(3): 256-267. July 1953.
Tells how and why these stations are used and discusses many data obtained from them. Topics include: cost of station operation (as low as 32¢ per head), types of information gained, size and distribution of kill, condition of game, hunter success, effects of various kinds of hunting seasons, increase of deer and elk kill, time of kill (mostly in first 3-5 days and from 8-10 A.M.), sex and age ratios, crippling losses, and hunter costs. Big game hunter costs for Colorado in 1946 were estimated at $6,849,963.

Throckmorton, Michael R. (Idaho Game Comm.) THE 1952 BIG GAME HARVEST. Idaho Wildlife Review 5(6): 4-8, illus. May-June 1953.
Statewide kills, 1943-1952, with information on population, hunter success, and special hunts. Total kill in 1952 was 41,354, of which 30,454 were deer and 8,792 were elk.

MAMMALS--HOOFED (Except deer)

Altmann, Margaret. (Hampton Inst.) SOCIAL GRACES IN ELK SOCIETY. Animal Kingdom 56(3): 66-72, illus. May-June 1953.
Popular account of habits and behavior of Jackson Hole elk after leaving wintering ground. Many aspects of elk life are illuminated: leadership, social relationships, care of young, etc.

Anderson, Chester C. (Wyo. Game Dept.) ELK TAGGING IN WYOMING. Wyoming Wild Life 17(5): 4-10, illus. May 1953.
Tells how trapping and tagging are done, and describes some of the migration patterns determined from tagging. Returns over a period of 10 years have been only 18.5%, which means that many tags are lost or not reported by hunters.

MAMMALS--HOOFED (Except deer)--Continued

Anonymous. [CALIFORNIA'S WILD BURROS GIVEN LEGAL PROTECTION.] Outdoor California 14(20): 2. May 20, 1953.
"The thousands of wild burros which roam southern California deserts have been placed on the protected list for two years with Governor Earl Warren's signing of a Senate bill." The bill provides penalties for violation and defines what is meant by a "wild burro." [Reasons for this action are not stated. A previous release (see WR 70:26) indicated that burros were dangerously inimical to native game animals.]

Anonymous. WHAT OF THE TULE ELK? Nature Magazine 46(7): 369, illus. Aug.-Sept. 1953.
A herd of around 200 tule elk remains in Owens Valley, California, on land owned by the City of Los Angeles. Stockmen and others are demanding removal of the herd. This species of small elk, Cervus nannodes, is more of a plains and desert animal than is any other form of elk. Its extinction would be a distinct loss. Aside from the Owens Valley herd, the species is represented by only 1 small group of captives. It is proposed that a refuge for tule elk be established in Owens Valley between Owens Lake and Tinnemaha Dam.

Cheatum, E. L., and J. E. Gaab. (Mont. Game Dept.) PRODUCTIVITY OF NORTH YELLOWSTONE ELK AS INDICATED BY OVARY ANALYSIS. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 174-177 p. 1953.
Lower jaws and pairs of ovaries were collected from 224 elk cows in January 1951. Age was determined from jaws. Reproductive condition was determined from embryos as well as from macroscopic study of 1-2 mm. sections of ovaries. Full-bodied corpora lutea from current breeding season denote ovulation accurately, and when persisting into winter they denote pregnancy. Significance of older, pigmented ovarian scars is not yet clear, but experiments under way should give the answer. At least 1 long yearling had bred. About 92% of the 2½-and 3½-year age classes had bred. In age classes from 4½ to 9½, all had bred. Breeding dropped to 93.7% in the 10-14-year class, and to 62.5% in cows of 15 or more years.

Davis, Grace Shults. RESPITE FOR THE BURRO. Nature Magazine 46(7): 370-374, illus. Aug.-Sept. 1953.
This is the burro-lovers' side of the California controversy in which burros were hunted and then protected. According to the author, burros were not damaging crops, and were not fouling water holes any more than range cattle and horses. "...recent studies of water holes shared by cattle, deer and wild burros showed these spots in good condition, and as clean as could be expected." Burros sometimes dig their own waterholes, which other animals might use. Authorities are quoted as saying that burros have not injured bighorn populations. It is also stated that burros were hunted the year around, with many young left to starve and many carcasses left to rot. The author feels that extermination was near, and that if populations recover enough to require hunting, hunting should be restricted to an open season. [For a different picture of the burro, see WR 70:26.]

Dow, Sumner A. (U. of Mont.) ANTELOPE AGEING STUDIES IN MONTANA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 220-224 p. 1953.
The ageing method proposed is based on study of jaws of a few pronghorns of known age and 1,177 jaws submitted by hunters. Dental characters of age groups up to 9½ years are described, with emphasis on younger groups. Approximately 75% of Montana antelope "are to be expected in the first 4 age classes (fawns to 3½ years). Approximately 1.7% remain in the herd at 9½ years of age and older."

MAMMALS--HOOFED (Except deer)--Continued

Halloran, Arthur F., and Harry B. Crandell. (US F&WS, Yuma, Ariz.) NOTES ON BIGHORN FOOD IN THE SONORAN ZONE. Journal of Wildlife Management 17(3): 318-320. July 1953.
Reports stomach contents of 3 specimens and lists 52 species of plants known to be eaten, with indication of preference and season of use. All data pertain to Yuma Co., Arizona.

Mason, Ellis. (Ore. St. Game Comm.) FOOD HABITS OF THE HART MOUNTAIN ANTELOPE HERD. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 95-97 p. 1953.
Results of analyses of 26 stomachs collected throughout year. Sagebrush was chief food, with phlox a poor second. Competition with livestock is slight, so it is safe to build up antelope herds.

Montagnes, James. BUFFALO X YAK X BEEF BREED = CATTALOS. Breeder's Gaz. 118: 18. Mar. 1953. [From Journal of Range Management 6(4).]

Morris, Melvin S., and Roger Hungerford. (Mont. St. U.) FOOD CONSUMPTION AND WEIGHT RESPONSE OF ELK UNDER WINTER CONDITIONS. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 185-187 p. 1953.
Eight elk cows and 5 calves from a Montana grass range were kept captive and fed experimental diets of cultivated hay, native grass, and browse for 2 winter months. Botanical and chemical composition of these foods are stated. Weight loss was least on hay (8.3% for cows, 0.3% for calves), intermediate on grass (10.5%), and highest on browse (18.7%). The poor showing of browse was unexpected and may have been caused by unfamiliarity. Loss of weight in winter was expected. It is concluded that meadow hay is satisfactory winter elk food.

Moser, Clifford A. (Colo. Game Dept.) BATTLE FOR THE BIGHORN. Colorado Conservation 2(4): 15-19, illus. July-Aug. 1953.
After telling of the history of bighorns in Colorado, this article reports recent deaths from verminous pneumonia caused by Protostrongylus stilesi, the hair lungworm. These heavy infestations are thought to be the result of overconcentration of bighorns on parts of their ranges. The state has decided on a limited open season on rams, with the hope that hunting will scatter the herds and create a sex ratio of about 1 ram to 10 ewes, which is believed to favor productivity. Map shows ranges of major herds in state.

Peterson, Randolph L. (Roy. Ont. Mus.) STUDIES OF THE FOOD HABITS AND THE HABITAT OF MOOSE IN ONTARIO. Contributions of the Royal Ontario Museum of Zoology and Palaeontology no. 36. 1-49 p., illus. May 1953.
Based on analysis of more than 1000 browse plots, stomach and scat contents, and other work. Moose are diversified feeders and require areas where there is a good mixture of food types. Shrub and sapling size deciduous plants and aquatic vegetation are important in summer; balsam fir is a staple in winter. Twelve species provide 92.3% of the winter diet. Both mature forest and very early stages are poor for moose. Mixed stands of rather early stages are favorable. Small burned or cut areas are soon used, but large areas are little used until they develop balanced winter and summer habitat. Selective lumbering may not open the canopy enough to benefit moose. Spruce budworm may greatly reduce supply of balsam fir, thus making winter food shortage. Heavy moose populations may ruin their own habitat and set back the forest. Light populations permit the succession to go too far for good moose habitat. Balanced populations tend to maintain or improve their habitat by the pruning effect and maintenance of openings. Other topics discussed are: palatability and factors correlated with it; use of mineral springs (salt blocks were not used); effect of deer and caribou on browse; possibility of winter food supply being limiting factor, partly through its effect on reproduction, in many areas.

MAMMALS--HOOFED (Except deer)--Continued

Quimby, Don C., and J. E. Gaab. (Mont. St. Coll.) PRELIMINARY REPORT ON A STUDY OF ELK DENTITION AS A MEANS OF DETERMINING AGE CLASSES. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 225-227 p. 1953.

Describes findings from study of 103 heads of known ages. Dental characters are reliable for first 3 age classes, but in older groups there is considerable variation and inconsistency. More material is needed. "As yet we have not been able to spot positive characters for an age class based on tooth wear. It appears that the conclusions of the study will be based on a number of criteria expressed as an average condition for a year class."

Rothe, Aline. THE JAVELINA. Cattleman 39: 29, 46. Jan. 1953. [From Journal of Range Management 6(3).]

Stokes, James D. (Calif. Dept. Game.) ANTELOPE MANAGEMENT IN CALIFORNIA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 99-101 p. 1953.

Story of antelope history, study, and management in state. There are now about 4,000 in northeastern California. The herd does not increase, for unknown reasons. Harvests of 300-400 are made annually on permit. A small herd has been established in Mono County by transplanting. Mexican antelope may be stocked in southern desert areas. Wild horses and burros should be reduced on antelope range.

MAMMALS--DEER

Anonymous. DEER HARVEST DROPS TO 27,630 FOR 1952. Wisconsin Conservation Department, Activities Progress Report no. 57. p. 11. May 1953. Also in Wisconsin Conservation Bulletin 18(6): 24-25. June 1953.

Includes figures on kill per county.

Anonymous. DEER SURVIVAL. New York State Conservationist 7(6): 15. June-July 1953.

The winter of 1952-53 in the Adirondacks was open and favorable to deer. Scarcely any die-off occurred. The herd is growing and unless harvested more heavily than present laws permit it will be subject to severe winter kill and more extensive stunting.

Bartlett, I. H. (Mich. Dept. Cons.) THE OLD ORDER CHANGES. Michigan Out-of-Doors 3(5): 12-17, illus. Oct. 1952.

Traces history of Michigan's deer and explains why 3 days of doe shooting were needed in 1952. Actually, more doe shooting was needed, but public opinion had to be considered. Bartlett believes that Michigan will never again have such huge deer herds as in the last 20 years, for habitat conditions are becoming less favorable. "From 1935 on the kill of deer could have been doubled and we would have better deer range and more and better deer to take than we have today."

Bissell, Harold D. (Calif. Dept. Game.) NUTRITIONAL STUDIES ON CALIFORNIA BIG GAME. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 176-184 p. 1953.

Should be read by anyone who thinks that wildlife management, aside from the human element, is a relatively simple and well understood business. The paper is a discussion of past, present, and projected work on malnutrition of California deer. Forage chemistry and needs of deer and their rumen ciliates are considered. Despite much work, cause of starvation often is obscure. Deer may starve in the presence of plenty of apparently good forage, sometimes with stomachs full of nutritious food. Even the criteria of starvation are not adequate. Much highly technical work being done or to be done on these problems is described.

MAMMALS—DEER--Continued

Buechner, Helmut K. (St. Coll. Wash.) DOES ARE DEER. American Rifleman 101(4): 24-27, 65-67, illus. April 1953.
Data gathered from many states and other sources are presented in semi-technical form to demonstrate that when deer herds are properly controlled by either-sex seasons, reproduction is much better, quality of the game is better, and the range is kept in condition to carry the herd. The author also shows how the facts were used successfully to convince sportsmen that either-sex seasons are not only good business but a necessity.

Clark, E. Dan. A STUDY OF THE BEHAVIOR AND MOVEMENTS OF THE TUCSON MOUNTAIN MULE DEER. M. S. thesis, University of Arizona. 1-111 p. 1953.

Crane, Harold. (Utah Div. Game.) SOME MANAGEMENT ASPECTS OF GAME-LIVESTOCK RELATIONSHIP IN UTAH. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 90-91 p. 1953.
Discusses problems and methods of managing ranges for both cattle and deer. Winter ranges are continuing to deteriorate and deer herds must be cut still further. Reseeding projects may eliminate much deer browse.

Crump, William I., and Theodore C. Baker. (Wyo. Game Comm.) WYOMING'S 1953 WHITE-TAILED DEER TRANSPLANT. Wyoming Wild Life 17(6): 14-18, illus. June 1953.
Useful information on techniques involved in corral trapping.

Dasmann, William. (Calif. Dept. Game.) GAME RANGE REVEGETATION IN NORTHEAST CALIFORNIA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 127-129 p. 1953.
Discusses 3 main aims: 1. Restoration of perennial grasses to take livestock pressure from browse, and to provide more and better grass for deer. 2. Lessening of deer and stock pressure on browse to permit its natural recovery. 3. Exploration of means of restoring browse artificially, by cultural methods. Bitterbrush will receive first attention. In one winter starvation area it is hoped to turn under grass and plant sagebrush as an emergency food that is not too palatable to livestock.

Dow, Sumner. (Tenn. Game Comm.) DOE DEER MAY BE HUNTED NEXT SEASON. Tennessee Conservationist 19(6): 12-13, illus. June 1953.
A few areas in Tennessee already have as many deer as they can carry; their herds should be cut by shooting both sexes. This popular article explains the situation and tells why other measures are not good.

Hall, John M. (Ariz. Game Comm.) GAME-LIVESTOCK RELATIONSHIP STUDIES IN ARIZONA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 86-89 p. 1953.
Gives considerable information on deer-cattle competition on Kaibab North and briefly discusses 2 other studies. On Kaibab North the range is in poor condition. Deer are eating little grass but cattle are eating 17% browse. One cow eats 4.4 times as much browse as one deer. Cattle numbers should be limited to the level of moderate grass use, and deer numbers should be kept within carrying capacity of forage. Exclosure studies on grassy elk and deer range in Sitgreaves National Forest show little difference between areas where there is no protection and where only stock is excluded. Results vary with species of grass. Livestock exclosures on a brushy range in Kaibab Forest had heavy use of browse and some recovery of grass.

Julander, Odell. (Intermtn. For. & Range Exp. Sta., Ogden, Utah.) DEER AND LIVESTOCK COMPETITION IN UTAH. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 79-85 p., maps. 1953.
Discusses the considerable competition between deer and livestock and factors governing it. "Differences in grazing patterns and forage preferences indicate that more wild land values can be produced on most deer-livestock ranges by grazing both deer and livestock, in proper numbers, than by grazing either one

MAMMALS--DEER--Continued

alone. Suggestions for management of deer-livestock ranges are: (a) determine the areas used intensively by both deer and livestock; (b) determine the key forage species of deer and of livestock and especially those which are deer-livestock key species; and (c) adjust total numbers of grazing animals and seasonal use of livestock so that key species are properly utilized on the important dual-use feed grounds."

Moreland, Raleigh. (Wash. Dept. Game.) A TECHNIQUE FOR DETERMINING AGE IN BLACK-TAILED DEER. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 214-219 p., graphs. 1953.

The technique described utilizes dental characters and is based on the system of Severinghaus. It is elaborated for use to 7½ years. Study with this method was made of a southwestern Washington herd that had overbrowsed winter range and severe winter die-offs of fawns. Relatively few does of 1½-3½ years were found. Very few does survived to 7½ years, though previously not hunted. Bucks lived no longer. Few 1½ year old bucks had branched antlers, another sign of poor range. Figures show that close to 42% of bucks were shot per year.

Rogers, Glenn. (Colo. Game Dept.) GAME-LIVESTOCK FORAGE COMPETITION STUDY IN COLORADO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 228-232 p. 1953.

Progress report on study of effects of deer, sheep and cattle on sagebrush, juniper and pinon range. Large enclosures were used. Difficulties were encountered in statistical analysis of certain types of data, but several tentative conclusions were reached: 1. Browse can recover rapidly. Much improvement was seen in 3 years. Initial recovery was quickest with no use, but in 3-4 years more forage was produced with moderate use. 2. Competition on a properly stocked range is chiefly between animals of the same class. Carrying capacity is different for each animal species or combination of species. "...conversions of carrying capacity from one species to another ...such as five sheep equal one cow, are invalid." 3. Proper use of the pastures at present is about 1 deer to 2 acres per month; at this rate, use of better species is light to proper. Where there was no more than 1/4 acre per deer month, all browse was eaten and some deer died. 4. The dominant factor in range condition is average use, not overuse or drought. Properly used browse grew well during 2-year drought; plants outside enclosures grew little if at all. Overuse in 1 winter did little harm if use other winters was proper.

St. Amant, Lyle, and Carrol Perkins. (Box 9055, Univ. Sta., Baton Rouge, La.) DEER IN LOUISIANA. PART I. Louisiana Conservationist 5(8): 2-4, illus. May-June 1953.

Early explorers of what is now Louisiana found many types of country, including extensive grasslands that Indians maintained by fire. Deer were common in these grasslands, but were scarce in many other areas. The total herd in Indian days was approximately 300,000. Much of the state was wilderness until 1880. After that devastation was rapid, and by 1925 only about 20,000 deer remained, most of them in swamps and other areas with good escape cover. Today there are roughly 70,000 and the trend is upward. Reforestation is aiding the trend, but many suitable areas are too isolated for natural repopulation, and there are too few places where deer can escape from dogs and hunters with dogs. At present there are deer in 41 of the 64 parishes, with shootable populations in 22 parishes. A review of deer biology is appended.

St. Amant, Lyle, and Carrol J. Perkins. (Box 9055, Univ. Sta., Baton Rouge, La.) DEER IN LOUISIANA. PART II. Louisiana Conservationist 5(9): 14-16, map. July-Aug. 1953.

Discusses present populations, area and extent of suitable range, and future prospects. Methods of estimating numbers are discussed. The state is thought to have had about 65,000 deer in 1950, with an annual increment of approximately

MAMMALS--DEER--Continued

30% and a kill of 10-12%. Thousands of deer in coastal marshes are scarcely available to hunters. Distribution elsewhere is very uneven, with many upland areas in need of introductions. Nearly 50% of the state's deer are in 3 small bottomland areas where protection has been good. Limited transplanting into especially favorable areas is being carried on, and it is expected that the state will have a more than ample supply of deer within 20 years.

Tarr, Joseph A. DEER HAVE OWN NOTIONS ABOUT WHERE TO FEED. Science for the Farmer. Suppl. no. 3 to Bul. 553, 65th An. Rept., State School of Agric., Agric. Exp. Sta., State College, Pa. p. 4. June 1953.
After quantitative studies it was concluded that: 1. Clear-cut strips in woods were used more by deer than was a power line cut, although the power line area had great amounts of browse. 2. Clear-cut strips after 14 years were still producing more browse than uncut woods adjacent to them. 3. Deer prefer certain sites for feeding over others that are available. 4. Thorough knowledge of an area and of the deer's habits is essential in locating cuttings where they will be most used. Data are also given on response of witch hazel and red maple to browsing.

MAMMALS--MARINE

Fisher, H. D. (Atlantic Biol. Sta., St. Andrews, N. B.) SOME STUDIES ON THE BIOLOGY OF ATLANTIC COAST SEALS. Canadian Journal of Comparative Medicine and Veterinary Science 17(7): 305-313. July 1953.
An interesting and worthwhile summary of life history, reproductive biology, migrations, and special physiological adaptations of the Greenland or harp seal. Much of the material has been presented elsewhere in greater detail (see WR 71:32).

Kenyon, Karl W. (US F&WS, Seattle 2, Wash.) THE STELLER SEA LION. Pacific Discovery 5(4): 4-13, illus. July-Aug. 1952.
Finely illustrated, partly anecdotal account of habits and economics of this large sea lion. It is estimated that there are 50,000 of them alive. Control may be needed in some fishing areas.

Kenyon, Karl W., and Ford Wilke. (US F&WS, Seattle 2, Wash.) MIGRATION OF THE NORTHERN FUR SEAL, CALLORHINUS URSINUS. Journal of Mammalogy 34(1): 86-98, illus. Feb. 1953.
Comprehensive summary of original and published information on movements of this animal at sea, and on factors affecting movements. Homing and mortality are also discussed. Females and juveniles migrate loosely from the Pribilofs to American and Japanese waters. Adult males usually remain in northern waters. Apparently, no large bands occur at sea. Males tend to return to their birthplace as they approach maturity. Females tend to do so at earlier ages. There is some mixing of Asiatic and American populations. Migrating seals usually stay 10-50 miles offshore. Natural mortality during the first years is 70%.

Harrison, R. J., L. H. Matthews, and J. M. Roberts. (London Hosp. Med. Coll.) REPRODUCTION IN SOME PINNIPEDIA. Transactions of the Zoological Society of London 27(5): 437-540, illus. Oct. 1952. 2 pounds from Zool. Soc. London, Regent's Park, N. W. 8.
Important report on studies of gross and microscopic anatomy of reproductive tracts of 9 kinds of seals from various parts of the world, including Pribilof fur seals. Foetal, neonatal, and adult specimens were studied. Functional aspects are stressed, comparisons are made with other animals, and the literature is summarized. 75 references.

Rand, R. W. STUDIES ON THE CAPE FUR SEAL (ARCTOCEPHALUS PUSILLUS SCHREBER). 3: AGE GROUPING IN THE MALE. Progress Report, Government Guano Islands Administration, Union of South Africa Department of Agriculture. 28 p., illus. 1950. [From Journal of Mammalogy 34(1).]

MAMMALS--MARINE--Continued

Ruud, Johan T. AGE-STUDIES ON BLUE WHALES. Hvalradets Skrifter, Oslo, no. 33, pp. 72. 1950. [From Journal of Mammalogy 34(1).]

Scheffer, Victor B., and Karl W. Kenyon. (US F&WS, Seattle 2, Wash.) THE FUR SEAL HERD COMES OF AGE. National Geographic Magazine 101(4): 491-512, illus. April 1952. [From Journal of Mammalogy 34(1).]

Sergeant, D. E. THE STATUS OF THE COMMON SEAL (PHOCA VITULINA L.) ON THE EAST ANGLIAN COAST. J. Mar. Biol. Ass. U. K. 29: 707-717. 1951. [From Journal of Animal Ecology 22(1).]
"A study of the food, population, and ecology of this species. While seals on the open coast feed largely on fish, those in the Wash have become adapted to feeding on shellfish in the absence of large populations of fish."

Watt, Grace. AN EXPERIMENT IN MARKING THE GREY SEAL HALICHOERUS GRYPUS. Nature 169: 883. May 24, 1952. [From Journal of Mammalogy 34(1).]

MAMMALS--OTHER GROUPS

Reynolds, Harold C. STUDIES ON REPRODUCTION IN THE OPOSSUM (DIDELPHIS VIRGINIANA VIRGINIANA). University of California Publications in Zoology 52(3): 223-284, illus. 1952. 75¢.
Detailed study of breeding season, number of litters, number of young, estrous cycle, mating, gestation, breeding age, conditions in pouch, birth, development of young, temperature control in young, effect of dehydration on young. Ovulation is spontaneous. Estrous cycle averages 29½ days. Gestation period is 13 days. There may be 2 litters per season. Average number of young is about 7, but geographic variation in this is suggested. Young are weaned about 100 days after birth, and the next litter may be born a few days later. Females may begin producing young at the age of 6 months. Males become sexually mature at about 8 months. Growth of young as judged by snout-rump measurements is quite variable, making estimation of age difficult.

BIRDS--GENERAL

Blake, Charles H. (Mass. Inst. Tech.) REAPPLYING BANDS. Bird-Banding 24(3): 107. July 1953.
Tests show that bird bands weaken or break after being opened and closed a few times. The author does not recommend reusing a removed band.

Brian, M. V., and A. D. Brian. BIRD PREDATION OF DEFOLIATING CATERPILLARS. Scot. Nat. 62: 88-92. 1950. [From Journal of Animal Ecology 22(1).]
"In a survey of oaks on the coast plain north of the Firth of Clyde it was concluded that the birds were having a significant effect on the population of defoliating larvae."

Farner, Donald S. (Wash. St. Coll.) THE USE OF BANDING DATA IN THE STUDY OF CERTAIN ASPECTS OF THE DYNAMICS AND STRUCTURES OF AVIAN POPULATIONS. Northwest Science 26(2,3,4): 41-50, 79-94, 119-144. 1952. [From review by H. K. Buechner, Bird-Banding 24(3).]
"...Farner has shown in a previous study...that avian survival patterns tend to follow a logarithmic regression curve, indicating a stabilization of the annual mortality rate at a value independent of age after an initial juvenile period of higher mortality. In the present paper, mean annual mortality rates are calculated using a formula developed by David Lack (modified by Farner) to weight properly the mortality data gathered from banding records. Another formula is given for constructing survival curves. Farner's hypothesis of a constant mortality rate has a logical, sound basis. Inspection of data tabulated for a wide variety of species shows the tendency toward characteristic adult mortality rates which do not vary extensively with age to be common in birds, and apparently to be characteristic of populations within a given species

BIRDS--GENERAL--Continued

as well as for the species as a whole. The constancy may be explained by the inter-compensating of the factors contributing to adult mortality. The fact that mean longevity is only a small fraction of potential longevity argues against senescence as an important cause of death. Most of the available literature is summarized in an informative, systematic resumé of data on mortality based on the recoveries of banded birds. The author's interpretations of the data in this section are an invaluable contribution..."

Hachisuka, Masauji. BIBLIOGRAPHY OF CHINESE BIRDS. Quarterly Journ. Taiwan Mus. (Taipei, Taiwan, China) 5(2-3): 71-209. 1952. [From review by O. L. Austin, Jr., Bird-Banding 24(3).]

Valuable, amply annotated volume. "Hachisuka has laboriously ferreted out all the major and most of the minor titles known on the subject, and has managed to unearth an amazing number of rare, little-known local publications of limited distribution. His abstracts of these will prove indispensable to others working on Asiatic birds. Western ornithologists will be particularly grateful for his English abstracts of the works in oriental languages."

VI BULLETIN OF THE INTERNATIONAL COMMITTEE FOR BIRD PRESERVATION. 248 p. 1952. Available from Richard H. Pough, American Museum of Natural History, N. Y. 24, N. Y. $1.75 plus 15¢ postage. [From Journal of Wildlife Management 17(3).]

"In English, French, German and Spanish, this bulletin contains principles and by-laws of the Committee; summaries of recent conferences of the Committee and various sections; a description (5 pages in English) of the International Wildfowl Research Institute, to promote research on waterfowl in Europe; and concise statements of the situation regarding bird protection in 23 countries."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Davis, Earle A., Jr. SEASONAL CHANGES IN THE ENERGY BALANCE OF THE ENGLISH SPARROW. Ph. D. thesis, University of Illinois. 84 p. 1953. [From abstract in Dissertation Abstracts 13(3).]

Nice, Margaret Morse. (5725 Harper Ave., Chicago 37, Ill.). THE QUESTION OF TEN-DAY INCUBATION PERIODS. Wilson Bulletin 65(2): 81-93. June 1953.

Explodes the myth that some birds have incubation periods of 10 days or less, and points out that the myth grew only because of uncritical repetition of errors of a few "authorities." Incubation should be timed "from the laying of the last egg to its hatching."

Rand, A. L. (Chicago Nat. Hist. Mus.) USE OF SNAKE SKINS IN BIRD'S NESTS. Natural History Miscellanea no. 125. 1-5 p. June 1952.

Good discussion of subject. More than 30 species are known to use snake skins in their nests; 8 species do so regularly. The old idea that purpose of skin is to frighten off predators has been rejected. The present idea is that "Certain species have evolved tendencies to use certain special materials in their nests, materials different from those used by their near relatives, and shed snake skins in a number of cases happen to be one of these... The question remaining is one of why some species use nest materials that are characteristic for the species, and different from those of other, related species."

Schüz, Ernst. THE MIGRATION OF BIRDS (Vom Vogelzug. Grundriss der Vogelzugskunde). Verlag Dr. Paul Schöps, Frankfurt am Main, Germany. 232 p. 1952. Paper, DM 18.50; cloth, DM 22. [From review by D. S. Farner, Bird-Banding 24(3).]

"...A critical condensation of much of the information available on most aspects of bird migration." Among topics discussed are: broad and narrow front migration, directions of migration, loop migration, wintering areas, vertical migration, unusual migratory behavior, origin of migration, internal and external factors involved in migration, invasion species, and orientation. The volume evidently is a valuable, technical discussion of a wide range of subjects pertaining to migration.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Skutch, Alexander F. (San Isidro del General, Costa Rica.) HOW THE MALE BIRD DISCOVERS THE NESTLINGS. Animal Kingdom 56(3): 84-89, illus. May-June 1953.
Serious discussion of care of young by father, and how father finds out that young are hatched and ready for care. The mechanisms involved, of course, vary with the species.

Wolfson, Albert. (Northwestern U.) GONADAL AND FAT RESPONSE TO A 5:1 RATIO OF LIGHT TO DARKNESS IN THE WHITE-THROATED SPARROW. Condor 55(4): 187-192, graphs. July-Aug. 1953.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

British Ornithologists' Union. CHECK-LIST OF THE BIRDS OF GREAT BRITAIN AND IRELAND. H. F. & G. Witherby, London. xii + 106 p. 1952. 7s. 6d. [From Nature 171(4357).]
Similar in purpose and authoritativeness to our A.O.U. list. Common names are given for species, not subspecies. American and British common names are given for species common to both areas.

Gibson, J. A. THE BREEDING DISTRIBUTION, POPULATION AND HISTORY OF THE BIRDS OF AILSA CRAIG. Scot. Nat. 63: 73-100, 159-177. 1951. [From Journal of Animal Ecology 22(1).]
"A complete census of breeding birds of the rock in the Firth of Clyde well known for its gannetry, detailed figures for two dozen colonies in which are given for 1936-42 and 1947-50. Detailed figures for kittiwake, guillemot, razorbill and puffin colonies are also given for 1950. The status of non-breeding species is also indicated."

Marshall, David B., and Leroy W. Giles. (US F&WS, Fallon, Nev.) RECENT OBSERVATIONS ON BIRDS OF ANAHO ISLAND, PYRAMID LAKE, NEVADA. Condor 55(3): 105-116, illus. May-June 1953.
Status and habits of the water birds of this federal refuge. "Rapidly declining water levels in Pyramid Lake will make the 250-acre island a peninsula in the near future with the probable loss of the nesting colonies."

Murray, J. J. (6 White St., Lexington, Va.) FIRST REVISION OF THE VIRGINIA 1952 'CHECK-LIST.' Raven 24(5-6): 34-45. May-June 1953.

Squires, W. Austin. THE BIRDS OF NEW BRUNSWICK. New Brunswick Museum, Monographic Ser. no. 4. 164 p., illus. 1952. $2.00. [From review by W. Earl Godfrey, Bird-Banding 24(3).]
An important, critical study that discusses the occurrence and local status of 331 species and subspecies.

BIRDS--PARASITES AND DISEASES

Dane, D. Surrey, J. A. R. Miles, and M. G. P. Stoker. (St. Thomas's Hospital, London.) A DISEASE OF MANX SHEARWATERS: FURTHER OBSERVATIONS IN THE FIELD. Journal of Animal Ecology 22(1): 123-133, map and graph. May 1953.
Report of study of epizootics of puffinosis, a frequently lethal virus disease of gulls and shearwaters. Many young birds are killed by the disease, but the population as a whole remains remarkably stable. Similar stability is seen where numerous young sea birds are taken by man.

Manwell, Reginald D. (Syracuse U.) HAEMOPROTEUS IN WILD BIRDS. (Abstract only.) Proceedings of the Society of Protozoologists 3: 2. Sept. 1952.

BIRDS—UPLAND GAME—GENERAL

Campbell, Howard. (N. M. Dept. Game.) HABITAT IMPROVEMENT FOR UPLAND GAME BIRDS IN NEW MEXICO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 115-118 p. 1953.

For prairie chickens, 18 prairie tracts totalling 17,040 acres have been purchased and fenced against grazing. They have been improved by food and cover plantings, mechanical feeders, and water developments. The latter are described. For dove, and scaled and Gambels' quail, gallinaceous guzzlers are placed in 2-acre fenced areas. Mechanical feeders and natural or artificial cover are placed in these areas. Cholla cactus is especially good cover, and transplants readily. For turkey, 4 large tracts are being improved by reduced grazing, water development, and food patches. Similar measures are being used for sage grouse.

Lee, Levon. (N. M. Dept. Game.) UPLAND GAME BIRD MANAGEMENT. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 110-112 p. 1953.

Survey of status and management problems of various species in New Mexico. A 10-12 year cycle of quail and a longer cycle of grouse and turkey are believed to exist.

McKean, John W. (Ore. St. Game Comm.) MANAGEMENT OF OREGON'S NATIVE UPLAND GAME BIRDS. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 102-105 p. 1953.

General discussion. Native grouse and quail in Oregon do not have acute cycles of abundance. All species except mountain quail can stand reasonable amounts of hunting, and hunting pressure is not heavy. Sage grouse and valley quail can be increased by transplanting.

BIRDS—QUAIL

Campbell, Howard, and Levon Lee. (N. M. Dept. Game.) STUDIES ON QUAIL MALARIA IN NEW MEXICO AND NOTES ON OTHER ASPECTS OF QUAIL POPULATIONS. New Mexico Department of Game and Fish, Santa Fe. ix + 79 p., maps and graph. 1953.

Decline of scaled and Gambel quail in 1944 led to the study of quail malaria and louse flies here reported in detail. Infection with Haemoproteus lophortyx was common and widespread in Gambel quail, scarce in scaled quail. Plasmodium sp., Strain 50-A was found in both species. These 2 parasites seem to do little harm to adult quail, but may affect young seriously. Distribution and incidence of these malaria organisms in the state is described. State distribution of quail species is mapped. A louse fly, Stilbometopa impressa, is a known vector of Haemoproteus; its annual cycle of abundance is outlined. Various diseases and parasites of quail seen in the study are discussed. Malarial infection did not seem to affect quail weights. Weights of both sexes of scaled and Gambel quail are plotted by month. Age and sex ratios for these birds are analyzed. The chief management recommendation is that care be taken to avoid introducing infected Gambel quail into uninfected populations of either species, or into game farms.

Gooden, Samuel K. (Iowa St. Coll.) A COLLAPSIBLE QUAIL TRAP. Journal of Wildlife Management 17(3): 389-391, illus. July 1953.

Square, collapsible trap with removable funnels and net top.

Harper, T. A., R. V. Boucher, and E. W. Callenbach. (Agric. Exp. Sta., St. Coll., Pa.) THE INFLUENCE OF VITAMIN A LIVER STORAGE AND STRAIN DIFFERENCES ON SURVIVAL IN ADULT BOBWHITE QUAIL. Poultry Science 32(1): 166-175. Jan. 1953.

Describes experiments with 5 strains of game farm bobwhites. Of 70 7-month old quail, none survived starvation more than 210 hours. One strain had especially low survival time. Of 15 10-month old quail from 3 strains, none survived starvation more than 127.5 hours. Sexual differences in survival

BIRDS—QUAIL—Continued

were not significant. No relationship was found between length of survival and vitamin A content of livers. In 5 of 8 comparisons, vitamin A content of livers was higher in starved birds. Of 28 7-month old quail of 2 strains placed on diet low in vitamin A, 21 lived 119 days without signs of avitaminosis. None of the mortality was attributed to avitaminosis A. There was, however, little sexual development in the deficient groups. [Initial level of vitamin A storage in experimental birds was very high. At normal rate of depletion, avitaminosis would not have had time to develop in the course of these experiments.]

Harper, T. A., R. V. Boucher, and E. W. Callenbach. (Agric. Exp. Sta., St. Coll., Pa.) VITAMIN A AND SURVIVAL OF BOBWHITE QUAIL. Agricultural Experiment Station, State College, Pa., Bulletin 567. 1-21 p., graph. June 1953.

A long technical report of experiments on effects of starvation and vitamin A-low diets on different strains of game farm bobwhites. Very few 16-week old quail survived 45 days on diet low in vitamin A. All chicks deprived of vitamin A died from avitaminosis A within 8 weeks. No pronounced differences between strains or sexes were found. Relationships (or lack of them) between survival time, body weight, liver weight, and concentration of vitamin A in liver are discussed. It is suggested that if a strain of quail is to be selected for economy of vitamin A, selection should be made by placing chicks on vitamin A-low diet for 2 or more weeks.

Parmalee, Paul W. (Ill. St. Mus., Springfield.) HUNTING PRESSURE AND ITS EFFECT ON BOBWHITE QUAIL POPULATIONS IN EAST-CENTRAL TEXAS. Journal of Wildlife Management 17(3): 341-345. July 1953.

Hunting statistics for Post Oak Region in 1950-51 and 1951-52, effect of drought on hunting success, consideration of bag limit and hunting season. Breeding was good in 1950, with fall population of 1 quail per 5.5 acres, and winter adult-juvenile ratio of 1:6. Breeding was poor in 1951, with fall population of 1 per 12.2 acres, and winter age ratio of 1:1. Hunters covered more ground but killed fewer quail in 1951-52. Crippling loss in 1951-52 was 20.8%. Reduction of bag limit in years of low populations would affect few hunters, but might prevent local overshooting. In good or average years, populations are able to withstand hunting pressure, and it is logical to shoot a population down to late winter carrying capacity. Date of hunting season (Dec. 1 to Jan. 16) should be advanced to permit harvest before fall and winter decline begins.

Robinson, Thane S., and Rollin H. Baker. (U. of Kans.) CLIMATIC FACTORS AFFECTING THE 1951 KANSAS BOBWHITE POPULATION AS SHOWN BY EXAMINATION OF WINGS FROM HUNTER-KILLED BIRDS. Transactions of the Kansas Academy of Science 55(3): 287-296, illus. 1952.

Formal report of study summarized earlier (see WR 68:28).

BIRDS—PHEASANTS

Anonymous. PHEASANTS FLUOROSCOPED--WILDLIFE BIOLOGISTS DETERMINE HUNTING PRESSURE. South Dakota Conservation Digest 20(5): 12, illus. May 1953.

445 hens and 301 cocks, all killed in eastern South Dakota by winter storms or cars, were fluoroscoped. 27% of the cocks and 5% of the hens contained 1 to 11 shot. It is believed that this means that about 8% or 10% of the hen population was killed during the hunting season.

Anonymous. PHEASANT PRODUCTION PROJECT! North Dakota Outdoors 15(12): 14-15, 17, illus. June 1953.

North Dakota is beginning large-scale game-bird propagation. The idea is to restock areas where pheasants occasionally are killed out by hard winters. Chukars are being reared for release in the western part of the state.

BIRDS--PHEASANTS--Continued

Grondahl, Carroll R. (Iowa St. Coll.) WINTER BEHAVIOR OF THE RING-NECKED PHEASANT, PHASIANUS COLCHICUS, AS RELATED TO WINTER COVER IN WINNEBAGO COUNTY, IOWA. Iowa State College Journal of Science 27(4): 447-465, illus. July 1953.
Report of study made in first 5 months of 1951. Topics include: population and sex ratio; trapping, banding, and marking; winter movements; winter roosting habits; and spring movements. January population was 508, spring population was about 232. This decrease of about 54% is attributed to exodus of birds using area for its winter cover. Mean daily cruising radius in winter was 0.39 mile; few birds traveled more than 0.75 mile. There was considerable movement between shelterbelts and between a slough and a shelterbelt. Direction of dispersal from a slough filled with snow was random. Use of shelterbelts for roosting gradually declined after January. Roosting in shelterbelts was commonest in cold, windy times of deep snow. Trees 18-30 feet high were preferred for roosting. Spruce trees in 3 shelterbelts were used for roosting by 3-37 pheasants. Spring dispersal began March 5. Mean distance of spring dispersal was 0.55 mile. Of lost markers, or markers on dead birds, 80% were found less than 0.75 mile from place of marking, with maximum of 1.49 miles.

Hammar, Allan. (U. Conn.) EASTERN EQUINE ENCEPHALOMYELITIS IN PHEASANTS. Modern Game Breeder and Hunting Club News 23(6): 9-10. June 1953.
This serious disease of many birds and mammals has been found in pheasants in several parts of the Northeast.

Janson, Reuel G. (S. Dak. Dept. Game.) OBSERVATIONS INDICATING EGG-MOVING BY NESTING PHEASANTS. Journal of Wildlife Management 17(3): 386. July 1953.
Some eggs apparently were moved because of flooding.

Knoder, C. Eugene. NEW GAME BIRDS FOR OHIO: OUTLINE AND PLANS FOR UPLAND GAME BIRD DEVELOPMENT AND INTRODUCTIONS. Ohio Division of Wildlife, Technical Bulletin no. 1. iii + 26 p. April 1953.
A new game bird is wanted for the unglaciated and largely wooded area of southern Ohio. Various species and subspecies of pheasants and hybrids between them will be tested, both in the field and in pens. Large enclosures are being built for the pen trials. It is hoped that a suitable bird can be found by trying enough groups with different genetic constitutions. The bulk of the paper is a discussion of principles and problems underlying the project. This discussion is based on modern concepts of genetics, physiology, and behavior, with papers of Dobzhansky, Tinbergen, and many others freely cited. Enough approaches are outlined to keep a staff of specialists with unlimited funds busy for generations.

MacMullan, R. A., and L. L. Eberhardt. (Mich. Game Div.) TOLERANCE OF INCUBATING PHEASANT EGGS TO EXPOSURE. Journal of Wildlife Management 17(3): 322-330, graphs. July 1953.
During the pheasant low of the mid-1940's, broods were of normal size but there were fewer broods. Weather was the cause suspected, but "it is now obvious that there is no simple relationship between spring weather and fall populations." Hence, this study of the tolerance of eggs and chicks was begun. Authors' summary: "Incubating pheasant eggs were subjected to low temperatures and simulated rain for various lengths of time. From the tolerance data thus obtained, an equation has been set up to approximate the relationship between temperature, stage of incubation, and length of exposure as affecting survival." Wide tolerance was found, especially early in incubation. Chilling can kill embryos, however, and newly-hatched chicks are highly vulnerable to chilling. "A change in habits of hens during cold weather at late stages of incubation, when eggs are more vulnerable...could allow lethal exposure." Also, "severe cold, especially in conjunction with precipitation, could cause widespread mortality, if it occurred at a time when a large proportion of the chick population was vulnerable."

BIRDS--PHEASANTS--Continued

Mohler, Levi. (Neb. Game Comm.) WHERE ARE THE PHEASANTS? Outdoor Nebraska 31(3): 22-23. Summer 1953.
In summers of 1951 and 1952, Nebraska wardens and mail carriers saw 95 cocks per 100 hens. During hunting seasons of 1948 and 1949, hunters saw 79 and 86 cocks per 100 hens; they would have seen more cocks if they had not hunted concentration areas, where hens were commoner. Seasonal habits affect apparent sex ratios: in winter early in 1953 mail carriers saw 88 cocks per 100 hens, but in late April of the same year they saw 132 cocks per 100 hens. About 83% of cock-and-hen groups in late April and May had 1 or 2 hens per cock, and fewer than 5% of the groups had as many as 5 hens per cock. Kill was low in the dry, dusty fall of 1952--apparently because hunting effort was off by almost the same amount. Neither hunters nor their dogs liked the field conditions.

Parsons, William Gatewood. THE STATUS AND MANAGEMENT OF THE PHEASANT POSTED HUNTING AREAS OF UTAH. M. S. thesis, Utah State Agricultural College. 1953.

Trautman, Carl G. (S. D. Game Dept.) WINTER PHEASANT MORTALITY. South Dakota Conservation Digest 20(5): 5-7, 11, illus. May 1953.
Discusses winter storm mortality of recent years in South Dakota. The winter of 1949-50 was especially severe, with an estimated 750,000 pheasants suffocated as a result of wind-driven snow.

Weston, Henry G. (Iowa St. Coll.) RING-NECKED PHEASANT NESTING ACTIVITIES ON BIRGE AND GRASS LAKES, EMMET COUNTY, IOWA 1948. Iowa Bird Life 23(2): 26-29. June 1953.
Summary (with tables) of study of nesting cover and nesting success in 2 drained lake beds. First eggs were laid in week of April 18-24, and first nests were established between April 25 and May 1. First eggs hatched in week of May 16-22, last eggs in week of August 1-7. Nesting success was low, 16.9% at Grass Lake and 21.0% at Birge Lake. Losses were caused by farm operations and unknown factors. Blue grass was most often used (39.6%) for nesting at Grass Lake, barley (31.6%) and mixed alfalfa-brome (31.6%) on Birge Lake. Nesting success was highest in tall, dense cover.

Woodgerd, Wes. (Mont. Game Dept.) THE MAGPIE AND THE PHEASANT. Montana Wildlife 3(2): 22-23, illus. Spring 1953.
Questions value of extensive magpie control, pointing out that many pheasant eggs eaten by magpies probably are randomly laid eggs or from dump nests or deserted nests. Predation has value in spreading the nesting season, and in causing continuation of good nesting instincts.

BIRDS--GROUSE, PARTRIDGE, ETC.

Barnett, Dan C. (Wash. St. Game Dept.) CHUKAR PARTRIDGE INTRODUCTIONS IN WASHINGTON. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 154-161 p. 1953.
"...basically a summation of the material from Mr. Galbreath's completion report..." [See Galbreath and Moreland, WR 73.]

Christensen, Glen C. (Nev. Game Comm.) OVERWINTERING OF THE CHUKAR PARTRIDGE (ALECTORIS GRAECA) IN NEVADA, U.S.A. Journal of the Bombay Natural History Society 51: 277-279, illus. Dec. 1952.
Chukars overwinter well where they can find the green grasses and winter annuals on which they are dependent. When heavy snows fall, the birds descend to relatively snow-free valleys, but go back to higher altitudes or windswept slopes as soon as conditions permit. In northern Nevada, when there is deep snow for long periods, some chukars starve and others congregate on cattle feeding areas, where they glean a meagre living off barley hay or cottonseed cake. Browse plants extending above the snow are not eaten.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Cox, James L. (N. M. Dept. Game.) GIVE THE CHUKARS ANOTHER CHANCE. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 171-173 p. 1953.
The author believes that semidomestication in game farms can practically destroy natural brooding instincts. He recommends introduction of wild-trapped chukars at well chosen release sites. The bulk of the paper describes the habitats and habits of chukars in Turkey and other parts of the Middle East. There the birds are hardy, occupy a considerable range of habitats, and hold up well where predators are varied and abundant. There are about 30 subspecies of chukars and some of them should meet U. S. needs.

Greenhalgh, Clifton M., and Lynn R. Nielson. (Utah St. Game Dept.) CHUKAR INTRODUCTIONS IN UTAH. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 165-167 p. 1953.
Discussion of problems of breeding in game farm, and of release policies. The chukar and other game birds are much needed in Utah, for 97% of the state is barren of game birds.

Gullion, Gordon W. (Nev. Game Comm.) NEVADA'S EXPERIENCE WITH THE CHUKAR PARTRIDGE. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 149-153 p. 1953.
History in state, present importance, regulations, distribution, habitat, foods, limiting factors, possible value of other races for unoccupied areas, costs of purchasing or transplanting. Hunters took 36,184 in 1951. Most of the population is in central and west central Nevada. Rough, brushy and grassy areas with readily available water are required. Areas of deep, lasting snow are inimical. Especially important foods are fiddleneck (Amsinckia) and cheatgrass (Bromus tectorum). Late summer trapping at water holes should be a cheap method of getting birds for transplanting.

Hungerford, K. E. (Univ. of Idaho.) RUFFED GROUSE MANAGEMENT PROBLEMS IN IDAHO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 113-114 p. 1953.
There are good grouse populations but too little hunting pressure. Kill on study area is only 6-13%; 50-75% would better take the surplus, which is doomed anyway. Improvement of 5-6 acres per 100 acres of range would make the range ideal. Improvements include occasional water developments and well located feeding, resting and roosting cover for summer, and thinnings or release cuttings to provide winter food. These are mostly present or easily provided in young forests; older forests present more problems.

National Committee on the Prairie Chicken. (Nat. Wildl. Fed., Wash., D. C.) FIRST REPORT. Conservation News 18(4): 1-5. April 1953.
About 350,000 prairie chickens now exist. They were hunted in only 5 states in 1952. Cause of decline is decrease of habitat through intensified agriculture and reforestation. These birds do not require original conditions; some of their best range consists of cropland mixed with well managed grassland. The grassland need not be of native types. Recommendations include: suitable refuge areas where bird is scarce; management for hunting in 5-8 states; more research and management by states; use of unappropriated PR funds to aid chickens; systematic coordination of projects; coordination of chicken and sharptail management where ranges overlap; establishment of Grasslands National Monument; consideration of chickens in state and federal land-use projects; educational campaign directed toward farmers, sportsmen, and others in prairie chicken range.

Pennie, I. D. THE HISTORY AND DISTRIBUTION OF THE CAPERCAILLIE IN SCOTLAND. Scot. Nat. 62: 65-87, 157-178. 63: 4-17. 1950-51. [From Journal of Animal Ecology 22(1).]

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Pennie, I. D. SUPPLEMENT TO THE CAPERCAILLIE REPORT. Scot. Nat. 63: 135. 1951. [From Journal of Animal Ecology 22(1).]
"A detailed account of the spread of Tetrao urogallus in Scotland since its reintroduction in 1837-38, with a reassessment of its status based on a widely circulated questionnaire. There is no evidence to suggest that the bird is still expanding its range, and in many areas there has been a substantial decrease in the past ten years."

Petraborg, W. H., E. G. Wellein, and V. E. Gunvalson. (Minn. Div. Game.) ROADSIDE DRUMMING COUNTS A SPRING CENSUS METHOD FOR RUFFED GROUSE. Journal of Wildlife Management 17(3): 292-295. July 1953.
Describes a quick and simple way of determining ruffed grouse populations over large areas, and discusses some of the results. Birds per square mile increased from 59 in 1949 to 104.6 in 1952. The 1949-52 period appears to have had a population high. Areas with a good variety of topography and vegetation produced the highest counts.

Salter, Robert L. (Idaho Game Dept.) CHUKAR PARTRIDGE INTRODUCTIONS IN IDAHO. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 162-164 p. 1953.
Author's summary: "Chukar partridge were first liberated in Idaho in 1933. Since that time there has been a total of 5,429 birds released in 21 counties of the state, with 2,281 of this number being released in 1951-52. Chukars have become established in sizeable numbers in five counties and are present in lesser numbers in three other counties. Failure in some early plantings can be attributed to liberation of birds in unsuitable habitat and/or releases of too small numbers to establish populations. Chukar habitat requirements seem to be fairly consistent with those found on mule deer winter ranges in southern Idaho. Future plans call for the liberation of approximately 3,000 chukars each year for a minimum of five years."

Uhlig, Hans G. (929 2nd Ave., Marlinton, W. Va.) WEIGHTS OF RUFFED GROUSE IN WEST VIRGINIA. Journal of Wildlife Management 17(3): 391-392. July 1953.
Average weights only of 168 grouse shot in falls of 1949-51. Juvenile and adult males and females are tabulated separately; numbers weighed are stated.

Wells, George R. (Wyo. Game Comm.) WYOMING CHUKAR PARTRIDGE TRANSPLANTING EXPERIENCES. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 168-170 p. 1953.
Discusses game farm breeding problems and states that the chukar is becoming established in parts of Wyoming.

Westerskov, Kaj. ON AGE COMPOSITION AND BARRENNESS IN THE DANISH POPULATION OF PARTRIDGES, PERDIX PERDIX (Om Aldersfordeling og Goldhed i Agerhønsebestanden). Vildtbiologisk Station (Kalö pr. Rönde, Denmark), Meddelelse no. 4. 1-12 p. May 1951. Reprinted from Dansk Jagttidende 1951, vol. 68(3): 26-28.
Examination of 6,065 partridge wings in Denmark in 1949 revealed 80.3 per cent juvenile birds. Of the adult birds, 546 were hens, corresponding to a total of 546 coveys averaging 11 birds. In the fall of 1949, counts of 493 coveys averaged 12 birds per covey. Banding data showed a turnover rate over a 4-year period of 100: 19.3: 4.9: 0, which corresponds closely with theoretical calculations using Petrides' turnover formula. Meagre data indicate that partridge hens will lay well even when several years old; with a turnover period of 3-4 years and the high breeding potential even among the older age groups, it is very unlikely that actual "barren" (sterile) partridges ever occur in a wild population, so the common practice of concentrating on killing-off of such "barren" pairs of partridges is therefore considered unprofitable.--Kaj Westerskov.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Westerskov, K. E. (New Zealand Wildl. Serv., Wellington C 1, N. Z.) A NOTE ON PARTRIDGE TERMINOLOGY. Journal of Wildlife Management 17(3): 386-387. July 1953.

Alectoris rufa should be referred to by its established name, "red-legged partridge." It is not and should not be called "red quail."

Wing, Leonard W. CYCLES OF EUROPEAN PARTRIDGE ABUNDANCE. Journal of Cycle Research 2(3): 56-76, graphs. Summer 1953.

Author's abstract: "Partial analysis of a bag record (1727-1909) of the European Partridge (Perdix perdix) at Kruman (Czecho-Slovakia) reveals an alpha cycle 22.71 years long with an amplitude of 145.5% of trend at the high and 68.7% of trend at the low. Other cycles found and measured for length, amplitude, and timing are 13.95, 11.84, 8.33, 8.05, 5.09, and 4.14 years. A record (1793-1933) from Norfolk, (England) has many irregularities that make analysis difficult, but one cycle has been measured and found to be 12.25 years in length and with an amplitude of 138.77% of trend at the high and 72.2% of trend at the low. Many additional cycles are indicated as present in both records. The paper describes methods of analysis in simple terms."

BIRDS--TURKEY

Allen, Ralph. (Ala. Dept. Cons.) SPRING TURKEY SEASON. Alabama Conservation 24(6): 8, illus. May-June 1953.

Estimated Alabama kill, by counties, in spring of 1953. Total: 2,450.

Garrison, Robert C. (Fla. Game Comm.) SHEPHERDING OUR TURKEY FLOCKS. Florida Wildlife 7(1): 28-29, 45, illus. June 1953.

Popular account of experiments with turkey feeders and how the feeders are made. "The use of a feeder...where a few wild-trapped turkeys have been released, and where no other turkeys existed, has almost without exception resulted in the birds staying together better the first year, surviving better, and rearing larger broods of young..."

Reeves, Robert H. (Ariz. Game Dept.) WILD TURKEY MANAGEMENT IN ARIZONA. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 106-109 p. 1953.

Summary of studies of mortality, foods, censusing, and hunting results. Mortality from predation and other natural causes seemed insignificant, but various human activities were detrimental. Of the many foods eaten, juniper berries were the most important, especially in winter. Populations are counted in winter concentration areas, and trends are followed from tracks in road. There was an important increase from 1949 to 1951. In controlled hunts of 1951, hunter success was 19.8% as compared to 9.7% in 1946. Habitat improvements, including water developments, are being extended.

Schemnitz, Sanford D. FOOD STUDIES OF THE WILD TURKEY IN FLORIDA. M. S. thesis, Univ-sity of Florida. August 1953.

Snyder, Robert L., and Harvey A. Roberts. (Pa. Game Comm.) PENNSYLVANIA'S WILD TURKEY RANGE, PAST AND PRESENT. Pennsylvania Game News 24(8): 4-7, illus. Aug. 1953.

"Within fifteen years the wild turkey has expanded its range from about 2,000,000 acres to over 13,000,000 acres." In the old days turkeys occurred in all parts of the state, but by 1938 they were nearly restricted to the south-central region. Since 1938 they have become common in the north-central region (maps), owing at least in part to maturation of forests, and are absent only in 10 counties of the state. Meanwhile, they have declined in the south-central region for unknown reasons.

BIRDS--DOVES AND PIGEONS

Glover, Fred A. (Humboldt St. Coll.) A NESTING STUDY OF THE BAND-TAILED PIGEON (COLUMBA F. FASCIATA) IN NORTHWESTERN CALIFORNIA. California Fish and Game 39(3): 397-407, graph and map. July 1953.

Work in 1951 gave limited amounts of information on many topics, including migration dates, food, courting, nesting, production, cover utilization, and factors affecting production. Territories averaged about ¼ mile across and ½ mile apart. There was only 1 egg per nest and fall populations were 2-3 adults per 1 young. Approximately 79 young were reared to flight age by 109 breeding pairs. The birds required fairly large trees and dense cover. All nests were near permanent water. Selective logging and clear cutting in small blocks were not unfavorable, and helped produce food. Forest stands over 20 years old were acceptable. Recommendations include: preservation of forest strips along watercourses; cutting in small blocks; encouragement of spruce groves; and initiation of postbreeding censuses, banding studies, and analyses of hunters' bags.

Levine, Norman D., Harold C. Hanson, and Charles W. Kossack. (U. of Ill.) BLOOD PROTOZOA OF THE MOURNING DOVE. (Abstract only.) Proceedings of the Society of Protozoologists 3: 2. Sept. 1952.

Gives figures on incidence of Haemoproteus sacharovi, H. maccallumi, and Leucocytozoon sp. in 206 doves taken in Illinois over a 4-year period. Year-to-year variation in incidence is reported.

Newsom, John D., J. B. Kidd, and Robert E. Murry. (La. Wild Life Comm.) MOURNING DOVE MANAGEMENT IN LOUISIANA. Louisiana Conservationist 5(8): 16-18, illus. May-June 1953.

The dove population has recovered from disease and storm losses and is as high as in 1949. There used to be relatively few large flocks, now there are many small ones. Band returns (mapped) show that there are resident doves, but that many doves shot in the state are from the Middle West. The main nesting season is April-August; nest failures are common in other months. Annual turnover of population is 70%, but only 20% of this can be charged to legal hunting. It is thought that most natural mortality occurs before February, and that 3 or 4 doves could be killed in September with no more effect on the population than 1 killed in winter. Relaxation of regulations is recommended to permit: all day hunting, bag limit of 15 per day, season of 45 days, and early September season in northern part of state.

Patterson, John R. (Wash. Game Dept.) THE MOURNING DOVE AS A GAME BIRD. Washington State Game Bulletin 5(3): 4, 12. July 1953.

Concise review of literature on importance, reproduction, food habits, etc. Over 11 million doves were harvested in U. S. in 1942. This amounts to about 1/2 the number of quail, 2/3 of the pheasants, and 3/4 of the ducks. Of all shotgun shells sold in U. S., 7% are expended on doves, 9.5% on pheasants, and 10.5% on waterfowl. Despite this hunting pressure, only about 3% of bands are returned, similar to returns for robins, which are not hunted. Returns on waterfowl are 10-15%. Apparently doves are not heavily harvested. Irrigation farming in Washington is considerably increasing dove populations.

BIRDS--WATERFOWL

Addy, C. E. (US F&WS.) FALL MIGRATION OF THE BLACK DUCK. U. S. Fish and Wildlife Service, Special Scientific Report: Wildlife no. 19. 1-63 + 32 p. of maps and graphs. June 1953.

Based on analysis of 17,518 shooting recoveries. Introduction discusses limitations on use and interpretation of banding recoveries. The body of the report details patterns of dispersal from important banding stations and summarizes records for states and regions. Time and extent of migration by various populations is dealt with. Migration patterns show considerable variation between banding stations and between regions. Usually there is a significant difference in pattern of dispersal from stations 50-200 miles apart. An important variable between banding stations is percentage of

BIRDS--WATERFOWL--Continued

recoveries taken in vicinity of station. This varies from 0 to 80%. A high percentage of local recoveries usually is associated with habitats that serve as wintering grounds, or which are large enough that ducks need not be driven out early in season by shooting or weather. Data indicate that in northern states where wintering or more sedentary populations occur, bait trapping in late summer and fall will not properly sample both sedentary and migrant groups. Characteristics of migration through a major region, or along a particular route, cannot be determined from banding at any one point. Overall population movements can be determined only through analysis of records from a series of banding stations located from Canadian breeding grounds to southern wintering grounds.--C. E. Addy.

Alcorn, J. R. (Fallon, Nev.) FOOD OF THE COMMON MERGANSER IN CHURCHILL COUNTY, NEVADA. Condor 55(3): 151-152. May-June 1953.

Anonymous. DO WILD GEESE INJURE WHEAT CROPS? Washington State Game Bulletin 5(3): 12, illus. July 1953.
Reviews Virginia results (see WR 70:41) and adds new Washington data showing that best wheat crops were obtained where geese had grazed young wheat the most closely.

Atkeson, Thomas Z., and Lawrence S. Givens. (Box 1643, Decatur, Ala.) THE USE OF HAY CROPS IN SOUTHEASTERN WATERFOWL MANAGEMENT. Journal of Wildlife Management 17(3): 382-383. July 1953.
Recommendations for management of several kinds of cultivated grasses and legumes for benefit of wintering geese and field-feeding types of ducks.

Banko, Winston E. (US F&WS, Monida, Mont.) NO SWAN SONG FOR THE TRUMPETER. Montana Wildlife 3(2): 10-12, illus. Spring 1953.
Brief account of history and biology of trumpeter swan. There are now nearly 600 of these swans in the U. S.

Fuller, Robert W. STUDIES IN THE LIFE HISTORY AND ECOLOGY OF THE AMERICAN PINTAIL (ANAS ACUTA TZITZIHOA VIEILLOT) IN UTAH. M. S. thesis, Utah State Agricultural College. 1953.

Hancock, Hunter M. (Okla. A. & M. Coll.) FOOD HABITS OF WATERFOWL MIGRATING THROUGH PAYNE COUNTY, OKLAHOMA. Oklahoma A. & M. College, Research Foundation Publication no. 50. 1-36 p., graphs. May 1953.
Based on study of stomach contents of 187 ducks of several species collected in 1940-41 and 1949-50. Results are tabulated in several ways. Differences between foods in the 2 periods, and in clear and muddy waters are discussed. Submerged aquatic plants provided most of the food, but they are reduced in muddy waters, resulting in more feeding on shore-line and upland plants. "The development and maintenance of clear water or controlled fluctuation of water levels on muddy lakes and ponds will materially increase the food supply for waterfowl."

Jordan, James S. (Ill. Nat. Hist. Survey.) EFFECTS OF STARVATION ON WILD MALLARDS. Journal of Wildlife Management 17(3): 304-311. July 1953.
Report of experiments. Drakes that died had lost 45-60% of their weight, depending on environmental temperatures. Hens that died had lost slightly less. Weight loss was irregular, not steady. The critical period was in 3rd and 4th weeks, with most mortality in 4th. Mortality was higher in drakes than in hens. Changes in blood and internal organs are described. Birds recovered from weight losses of 44% without evidence of damage. It is believed that birds in the wild could withstand 2 weeks of complete starvation in winter.

BIRDS--WATERFOWL--Continued

Kozlik, Frank M., and Lawrence H. Cloyd. (Calif. Dept. Game.) DEVELOPMENT AND MAINTENANCE OF CALIFORNIA'S WATERFOWL HABITAT AREAS. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 203-206 p. 1953.

Because of crop damage by wintering waterfowl, state and federal refuges totalling 210,591 acres have been established in the state. These refuges are listed, with size and status indicated. 58,950 acres of the refuges are tillable and will be devoted to agricultural crops for waterfowl use, as 25% of the tillable acreage already is. Crops grown will be similar to those being damaged in the vicinity.

Lorenz, Konrad. (Dulmen in Westfalen, Germany.) COMPARATIVE STUDIES ON THE BEHAVIOR OF ANATINAE. In 7 parts. Avicultural Magazine 57(5): 157-182, Sept.-Oct. 1951. 58(1): 8-17, Jan.-Feb. 1952. 58(2): 61-72, Mar.-Apr. 1952. 58(3): 86-94, May-June 1952. 58(5): 172-184, Sept.-Oct. 1952. 59(1): 24-34, Jan.-Feb. 1953. 59(3): 80-91, May-June 1953. Each illus.

This series of studies was first published in the Journal für Ornithologie in 1941. It was translated by C. H. D. Clarke and revised by Lorenz prior to publication in Avicultural Magazine. Behavioral traits are described systematically, with many of the same points being considered for each species. The following outline of the treatment of the mandarin duck will give an idea of the contents: A. General. B. The non-sexual reactions and calls. C. The sexual reactions and notes of the female. C 1. Inciting. C 2. The coquette call. C 3. The flight call. C 4. The prelude to mating. D. The sexual reactions and notes of the drake. D 1. The general form of the display. D 2. The introductory shaking. D 3. Drinking and mock-preening. D 4. Burping. D 5. Display-shaking. D 6. The double-grunt-whistle. D 7. The combat of the drakes. D 8. The post-coital play. In the final part of the series, Lorenz discusses and diagrams the relationships of ducks and geese as indicated by their behavioral and other characteristics.

Matteson, Clyde P. (Colo. Game Dept.) FIVE-YEAR SUMMARY REPORT, CENTRAL FLYWAY AERIAL WATERFOWL COUNTS IN COLORADO. Colorado Game and Fish Department, Current Report 29. 1-9 p. Aug. 1952.

Discusses methodology and presents tabular data showing weather conditions and waterfowl numbers at different seasons, 1947-1951.

Meyers, A. V. (Ore. St. Game Comm.) WATERFOWL FOOD PRODUCTION PROBLEMS IN OREGON. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 198-202 p. 1953.

Plantings must be made where waterfowl are accustomed to feed or they may be unused, with crop damage a short distance away. It is best to work with locally growing plants, wild or cultivated, because of ease of increase and availability of seed stock. Small plantings of aquatics are often eaten out by waterfowl; it is better to improve conditions for existing species than to attempt such plantings. Success of a plant or a practice varies with region of state. Values of 28 plants in 3 main regions of Oregon are tabulated.

Miller, A. W., and B. D. Collins. (Calif. Dept. Game.) A NESTING STUDY OF CANADA GEESE ON TULE LAKE AND LOWER KLAMATH NATIONAL WILDLIFE REFUGES, SISKIYOU COUNTY, CALIFORNIA. California Fish and Game 39(3): 385-396, illus. July 1953.

Two hundred and one nest histories were obtained in spring of 1952. Preferred nesting sites were muskrat houses and islands. Factors in selection of nest sites seemed to be visibility, protection afforded, proximity of other nesting geese, and distance to water. Nesting success was 78.6%. Major causes of nest failures were desertion, 11.4%, and flooding, 5%. Predation was not important. Desertion was attributed to intraspecific strife caused by crowding. Hatching success was 87%. Average clutch was 5.13, and average hatch per clutch was 4.43. Of eggs in successful nests, 1.9% were infertile and 9.4% contained dead embryos. Length of nesting period was about 83 days, with 87% of the hatch occurring between April 23 and May 12.

BIRDS--WATERFOWL--Continued

Murdy, Horatio Williams. SOME OF THE RELATIONSHIPS BETWEEN LIVESTOCK GRAZING AND DUCK NESTING IN THE SALTGRASS VEGETATION TYPE IN UTAH. M. S. thesis, Utah State Agricultural College. 1953.

Nelson, Noland F. (Utah Game Dept.) MARSH DEVELOPMENT AND MANAGEMENT ON ARTIFICIAL IMPOUNDMENTS IN UTAH. Proc. 32nd An. Conf. Western Assn. St. Game & Fish Comm., Glacier Nat. Park, Mont., June 15-17, 1952. 207-209 p. 1953.
Waterfowl developments in Utah have more than fulfilled expectations but much has been learned. Shallow lakes or numerous channels are not enough. At modern impoundments, such as Ogden Bay, floodwaters are bypassed around the refuge, and in the refuge water is spread out through an irrigation system so that water is backed up behind small dikes and respread several times before going into a larger feeding lake. Experience with proper construction of dikes and dams is also described.

Savage, Christopher. THE MANDARIN DUCK. Adam and Charles Black, London. (Distributed by Macmillan Co., N. Y.) 78 p., illus. Year not cited. [From review by J. T. Zimmer, Natural History 62(6).]
Half of the book deals with the life history of this Oriental duck, which has become established in the wild in England. The other half is devoted to the history of the bird in Oriental art and literature. Many excellent illustrations.

Severn Wildfowl Trust. FIFTH ANNUAL REPORT, 1951-52. Country Life Limited, London. 191 p., illus. 10s. [From Journal of Wildlife Management 17(3).]
"Similar in style and attractiveness to its predecessors, this publication describes the progress of the Severn Wildfowl Trust, and includes many short articles of interest to waterfowl biologists. It contains Part Three of the series on the Swans, Geese and Ducks of the British Isles, with three excellent plates in color by Peter Scott."

Singleton, J. R. (Tex. Game Comm.) TEXAS COASTAL WATERFOWL SURVEY. Texas Game and Fish Commission, FA Report Series no. 11. 1-128 p., illus. June 1953.
This detailed report has much tabulated data and consists of 2 parts that might have been published separately. The first part contains diversified information on all waterfowl of the region. The second part is the most complete study of biology of the mottled duck yet presented. Subjects of part 1 are: description of area and its marsh types; results of winter inventories, 1947-52; results of analysis of contents of 1,017 stomachs collected in fall; importance of (a) controlled water levels with spring draw-off, (b) controlled burning, (c) controlled grazing; hunter success and cripple loss; sex and age ratios; species composition of bag; mortality from causes other than hunting; banding and band returns; trials of duck food plantings; and failure to control blackbirds with primacord explosions. The section on the mottled duck discusses: numbers (about 20,000, declining because of drought years and normal harvests); habitat preferences; fall concentrations; many aspects of life history and reproduction, based on 4-year study; productivity; sex and age ratios; movements; food habits; parasites; and management. Nesting success of mottled duck is about 28%, with most failures caused indirectly by man, but the birds will renest up to 5 times to bring off a brood. Rice culture favors this and other ducks. The most valuable management measure would be protection of nesting cover from grazing in spring.

Smith, Richard H. (409 Stapleton Bldg., Billings, Mont.) A STUDY OF WATERFOWL PRODUCTION ON ARTIFICIAL RESERVOIRS IN EASTERN MONTANA. Journal of Wildlife Management 17(3): 276-291, illus. July 1953.
Ponds averaged 3.2 acres in size and 8.2 years in age. Vegetation is described quantitatively. Twelve species of waterfowl used the ponds during summer. Commonest were mallard, pintail, and blue-winged teal. No diving duck was represented by broods. Statistics are given on use and production of ponds of 5 types, and on factors affecting production. "Based on the 1951 production figures, it appears that areas devoid of water habitat in the past produced an average of almost 2 ducks per square mile."

BIRDS--WATERFOWL--Continued

Yamashina, Y. CLASSIFICATION OF THE ANATIDAE BASED ON THE CYTO-GENETICS. Tokyo. Papers from the Coordinating Committee Res. Genetics, III: 1-34. 1952. [From informative and critical review by E. Mayr, Bird-Banding 24(3).]

BIRDS--CRANES, RAILS, SHOREBIRDS

Gullion, Gordon W. (Nev. Game Comm.) TERRITORIAL BEHAVIOR OF THE AMERICAN COOT. Condor 55(4): 169-186, maps and graph. July-Aug. 1953.
Based on 1949-50 study in California. Pairs maintain winter core areas 0.09 to 0.54 of an acre in size. Winter core areas are considerably smaller than summer territories. At onset of breeding season, resident pairs "go about securing their territories as nearly as possible along the previous year's lines. These territories range from 0.54 to 1.39 acres in extent, depending on cover types, and they average about 1.06 acres." Nonresident and yearling coots try to establish territories, and if they fail they move out. Coots become especially pugnacious to other animals when they have young. Immatures are driven from home by their parents. Information is given on homing experiments, and literature on territorial behavior of other rallids of the world is reviewed.

OTHER BIRDS

Day, Katharine C. (Route 3, Box 474, Eugene, Ore.) HOME LIFE OF THE VEERY. Bird-Banding 24(3): 100-106. July 1953.

Hopkins, Milton, Jr. (Fitzgerald, Ga.) THE BLACK VULTURE AS A PREDATOR IN SOUTHERN GEORGIA. Oriole 18(2): 15-17. June 1953.
Records of black vultures killing young pigs by pulling intestines through anus and pecking out eyes, and of turkey vulture pecking out eyes of new-born calf. The author observed black vultures waiting for a cow to calve. Literature on the subject is reviewed. Depredations may be increasing since dead livestock is seldom left in the field. Some stockmen are systematically trapping vultures, letting those caught remain as bait for more. Data are also given on time taken by vultures to gather when food is exposed, and on relative numbers of black and turkey vultures.

Koford, Carl B. (U. of Calif. at Berkeley.) THE CALIFORNIA CONDOR. National Audubon Society, Research Report no. 4. 154 p., illus. 1953. $3.00. [From review in Nature Magazine 46(7).]
This important report, based on 3 years of study, discusses the life history and ecology of a nearly extinct bird. The area in which the condors live is now a sanctuary, and the author believes that these birds can survive.

Lawrence, Louise de Kiriline. (Rutherglen, Ont.) NESTING LIFE AND BEHAVIOR OF THE RED-EYED VIREO. Canadian Field-Naturalist 67(2): 47-77, map. April-June 1953.

Mason, Edwin A. (Arcadia Wildl. Sanct., Northampton, Mass.) BARN SWALLOW LIFE HISTORY DATA BASED ON BANDING RECORDS. Bird-Banding 24(3): 91-100. July 1953.

McLeod, J. A., and G. F. Bondar. (Game & Fisheries Branch, Manitoba.) A BRIEF STUDY OF THE DOUBLE-CRESTED CORMORANT ON LAKE WINNIPEGOSIS. Canadian Field-Naturalist 67(1): 1-11, illus. Jan.-Mar. 1953.
Populations after breeding were estimated on the basis of 4 adults and non-breeding juveniles per nest, 3 eggs per clutch (2.43 and 3.63 averages found in 1943 and 1944), and 5% mortality of eggs and young. Population estimates for 1943 and 1944 were 48,031 and 75,247. Commercial fishes made up roughly 7.2% of the diet, or about 2.6 tons per day. Attempted control by breaking eggs and killing young was followed by 30-50% renesting. Five chemicals or mixtures that would kill eggs when sprayed on them were perfected in tests on chicken eggs. One of these, when field tested on cormorant eggs, seemed to give about 50% kill. The paper gives information on colony changes and other biological matters, including the fact that young cormorants are easily killed by hot sunlight.

OTHER BIRDS--Continued

Platt, M. I. DIET OF GOLDEN EAGLE. Scot. Nat. 63: 67. 1951. [From Journal of Animal Ecology 22(1).]
"Castings of Aquila chrysaëtos from south-west Scotland showed remains of Vulpes vulpes (cub), Lepus timidus, Corvus corone, Anas crecca and Phasianus colchicus."

Ratcliffe, D. A. DIET OF GOLDEN EAGLE. Scot. Nat. 63: 189. 1951. [From Journal of Animal Ecology 22(1).]
"Remains of domestic fowl, rabbit and stoat found at eyrie of Aquila chrysaëtos in south-west Scotland."

Stewart, Robert E. (Patuxent Refuge, Laurel, Md.) A LIFE HISTORY STUDY OF THE YELLOW-THROAT. Wilson Bulletin 65(2): 99-115. June 1953.

REPTILES AND AMPHIBIANS

Barbour, Roger W. (U. Ken.) THE AMPHIBIANS OF BIG BLACK MOUNTAIN, HARLAN COUNTY, KENTUCKY. Copeia 1953(2): 84-89. May 1953.
List annotated with information on life history and variation.

Brattstrom, Bayard H. (U. of Calif. at Los Angeles.) NOTES ON A POPULATION OF LEAF-NOSED SNAKES PHYLLORHYNCHUS DECURTATUS PERKINSI. Herpetologica 9(2): 57-64. July 1953.
Seasonal availability in different years, variation in size groups from year to year, number of eggs, foods.

Cagle, Fred R. (Tulane U.) AN OUTLINE FOR THE STUDY OF A REPTILE LIFE HISTORY. Tulane Studies in Zoology 1(3): 31-52. July 1953.
Well elaborated outline with references and brief discussions of many of the points. Should be of real value to those making or directing life history studies.

Clark, Hugh. (U. Conn.) EGGS, EGG-LAYING AND INCUBATION OF THE SNAKE ELAPHE EMORYI (BAIRD AND GIRARD). Copeia 1953(2): 90-92. May 1953.
Includes data on oxygen consumption of the eggs.

Davis, William B., and Frank T. Knapp. (Texas A. & M. Coll.) NOTES ON THE SALAMANDER SIREN INTERMEDIA. Copeia 1953(2): 119-121, graphs. May 1953.
Study of population from pond in Brazos Co., Texas. Information on reproduction, growth, weight, food, variation in costal grooves.

Goin, Coleman J., and Olive B. Goin. (U. of Fla.) TEMPORAL VARIATION IN A SMALL COMMUNITY OF AMPHIBIANS AND REPTILES. Ecology 34(2): 406-408. April 1953.
Study of a small area at Gainesville, Florida, for 4 years and 7 months revealed that as circumstances changed more species were found, and that although the number of species per genus was low at any one time, over a period of time the average increased.

Guidry, Ed. V. (Port Arthur, Tex.) HERPETOLOGICAL NOTES FROM SOUTHEASTERN TEXAS. Herpetologica 9(1): 49-56. June 1953.
Distributional and natural history records from Jefferson, Orange, Newton, and Hardin counties.

Johnson, Richard M. (Tenn. Wesleyan Coll.) A CONTRIBUTION ON THE LIFE HISTORY OF THE LIZARD SCINCELLA LATERALE (SAY). Tulane Studies in Zoology 1(2): 11-27, graphs. July 1953.
Statistical study of sexual dimorphism, size at sexual maturity, variation, and reproductive cycle. Based on Louisiana material.

Knowlton, G. F. (Utah St. Agric. Coll.) SOME INSECT FOOD OF SCELOPORUS G. GRACIOSUS (B.-G.). Herpetologica 9(2): 70. July 1953.
Lists insects from 10 stomachs. Utah.

REPTILES AND AMPHIBIANS--Continued

Moss, Don. (Ala. Dept. Cons.) HAVING TROUBLE WITH TURTLES? Alabama Conservation 24(6): 4-5, 17-19, illus. May-June 1953.
Describes and figures several types of traps useful in catching turtles. It is stated that Pseudemys and similar turtles are a nuisance to fishermen when common, even though they are not significant predators on fish.

Nichols, Una G. (3405 33rd St., San Diego 4, Calif.) HABITS OF THE DESERT TORTOISE, GOPHERUS AGASSIZII. Herpetologica 9(2): 65-69. July 1953.
Notes on activities of 4 captives: foods, burrowing, hibernation, courtship, egg laying.

Norris, Kenneth S. (U. Calif. at L. A.) THE ECOLOGY OF THE DESERT IGUANA DIPSOSAURUS DORSALIS. Ecology 34(2): 265-287, illus. April 1953.
A valuable contribution. Section headings: Habitats, Soil types, Plant associates, Burrows, Home range behavior, Aggressive behavior and territoriality, Yearly activity cycle, Problems relating to temperature and humidity, Behavior patterns related to temperature control, Light and color, Food habits, Summary and conclusions.

Ramsey, L. W. (Tex. Crist. U.) THE LINED SNAKE, TROPIDOCLONION LINEATUM (HALLOWELL). Herpetologica 9(1): 7-24, map and graphs. June 1953.
Taxonomic revision recognizing 3 races and containing sections on habitat and habits.

Ryan, Richard A. (Hobart & Wm. Smith Coll.) GROWTH RATES OF SOME RANIDS UNDER NATURAL CONDITIONS. Copeia 1953(2): 73-80. May 1953.
Growth of marked green, bull, and leopard frogs at Ithaca, N. Y. Toe clipping was used in preference to jaw tagging.

Stickel, William H. (US F&WS.) CONTROL OF SNAKES. U. S. Fish and Wildlife Service, Wildlife Leaflet 345. 1-8 p. June 1953.
Outlines methods that can be used for snake control around buildings, over large areas, or at dens. Twelve references.

FISHES

Gerking, Shelby D. (Indiana U.) EVIDENCE FOR THE CONCEPTS OF HOME RANGE AND TERRITORY IN STREAM FISHES. Ecology 34(2): 347-365, illus. April 1953.

Olive, John R. (Colo. A. & M. Coll.) A BIBLIOGRAPHY OF THE LIMNOLOGY AND FISHERY BIOLOGY OF COLORADO. Colorado Game and Fish Department. 1-34 p. Mimeo. Jan. 1953.
Titles are classified by animal groups from Protozoa through Amphibia, and under "Fish Management and General Fishery Biology" as well as "General Limnological Studies."

Roedel, Phil M. COMMON OCEAN FISHES OF THE CALIFORNIA COAST. California Department of Fish and Game, Fish Bulletin no. 91. 1-184 p., illus. 1953.
Valuable guide to sport and commercial fishes. Most species are illustrated by photograph and discussed under the headings: relationship, range, description, importance, fishing season, gear, and remarks. Warnings are given for dangerous species. There is an illustrated key, a glossary, and a list of references. Fishermen of other areas may wish that similar works were available to them.

U. S. Fish & Wildlife Service. SURVEY OF FISHERY ACTIVITIES, 1953. U. S. Fish and Wildlife Service, Circular no. 21. 1-133 p. May 1953.
Subtitled "A Catalogue of Current Research and Management Projects Pertaining to the Sport Fisheries of the United States." Hundreds of projects are listed by state, with information on nature of work, location, cost, and personnel to whom correspondence should be addressed. A generalized subject index is included.

FISHES--Continued

U. S. Fish & Wildlife Service. DINGELL-JOHNSON QUARTERLY, vol. 1. 1-79 p. July 1953.
The fisheries counterpart of Pittman-Robertson Quarterly. This issue covers the first year of federal aid to fisheries work. It is anticipated that future issues will appear 2-4 times a year.

INVERTEBRATES

Bequaert, Joseph C. (Harvard U.) THE HIPPOBOSCIDAE OR LOUSE-FLIES (DIPTERA) OF MAMMALS AND BIRDS. PART I. STRUCTURE, PHYSIOLOGY AND NATURAL HISTORY. Entomologica Americana vol. 32: 1-209, illus., Feb. 1953; and vol. 33: 211-442, illus., May 1953.
An encyclopedic reference that treats a great many topics in full detail. Unquestionably it is the standard reference in its field. It has an index and a 59-page bibliography. The table of contents is divided, the second part beginning on p. 211.

Pennak, Robert W. FRESH-WATER INVERTEBRATES. Ronald Press Co., 15 E. 26th St., N. Y. 10, N. Y. 769 p., 470 figs. 1953. $14.00. [From A.I.B.S. Bulletin 3(3).]
"...a comprehensive work on American fresh-water invertebrates.....Natural history, ecology and taxonomy have been emphasized; details of anatomy and physiology have been minimized. For the most part, only free-living, fresh-water invertebrates that occur in the United States are included. Cestodes, trematodes, parasitic nematodes, etc., are omitted. Some chapters, dealing with small or comparatively stable taxonomic groups, contain keys to species, while others, concerned with larger taxonomic groups, contain keys to genera only. The references at the end of each chapter consist of especially significant and comprehensive works, including older classical papers as well as recent contributions."

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Rousseau, Jacques. LES ZONES BIOLOGIQUES DE LA PÉNINSULE QUÉBEC-LABRADOR ET L'HÉMIARCTIQUE. Canadian Journal of Botany 30(4): 436-474, illus. July 1952.
Fits the vegetation of Quebec into a world-wide zonal scheme. From north to south in Quebec the zones are arctic, hemiarctic, subarctic, and temperate. The hemiarctic is not formed of transitional habitats but consists of purely arctic patches imprisoned in a net of subarctic forest strips.--Neil Hotchkiss.

VEGETATION--FLORAS AND COMMUNITIES

Cantlon, John E. (Geo. Wash. U.) VEGETATION AND MICROCLIMATES ON NORTH AND SOUTH SLOPES OF CUSHETUNK MOUNTAIN, NEW JERSEY. Ecological Monographs 23(3): 241-270, illus. July 1953.
Includes good information on variation in microclimate with site exposure and effect of these variations on vegetation.

Ledin, R. Bruce. (U. of Miami) THE COMPOSITAE OF SOUTH FLORIDA. Quarterly Journal of the Florida Academy of Sciences 14(2-3): 51-207, illus. June-Sept. 1951.
Handbook with keys and descriptions. There are brief introductory sections on ecology and floral affinities.

Schuster, Rudolf M. (U. of Miss.) BOREAL HEPATICAE, A MANUAL OF THE LIVERWORTS OF MINNESOTA AND ADJACENT REGIONS. American Midland Naturalist 49(2): 257-684, illus. March 1953.
An exceptionally well illustrated handbook with keys, descriptions, glossary, maps, information on collecting methods, and general information on the group. It is expected to be of use over much of the North-Central Region.

Tryon, R. M., Jr., N. C. Fassett, D. W. Dunlop, and M. E. Diemer. THE FERNS AND FERN ALLIES OF WISCONSIN. SECOND ED. University of Wisconsin Press. 158 p., 215 figs. Revised 1953. $3.50. [From A.I.B.S. Bulletin 3(3).]

VEGETATION--FOREST

Day, Gordon M. (3 N. State St., Concord, N. H.) THE INDIAN AS AN ECOLOGICAL FACTOR IN THE NORTHEASTERN FOREST. Ecology 34(2): 329-346. April 1953.
We are accustomed to thinking that the eastern U. S. was covered with almost unbroken forest when white men arrived. Day's extensively documented paper demonstrates that this was far from true. Indians kept a great many large areas in prairie or savanna conditions by clearing and burning. Virgin forest existed in some regions, but there was far less of it than generally thought, and much more open country, and much more ecological diversification. Almost every piece of land was used by some group of Indians, and these Indians burned or otherwise modified the vegetation as best they could to suit their economy. Increase and hunting of certain game, heath hen for example, was favored by the open areas.

Elliott, Jack C. (Mich. St. Coll.) COMPOSITION OF UPLAND SECOND GROWTH HARDWOOD STANDS IN THE TENSION ZONE OF MICHIGAN AS AFFECTED BY SOILS AND MAN. Ecological Monographs 23(3): 271-288, illus. July 1953.

Hattersley, Joseph G. (Berkeley, Calif.) A METHOD OF DIRECT SEEDING IN RODENT INFESTED AREAS OF SUMMER DROUGHT. Journal of Forestry 51(8): 579. Aug. 1953.
Reseeding forests in the presence of rodents has long been a problem. Cans have been used to protect seed spots, but they sometimes overheat. The present technique may offer at least a partial solution. The ground at the spot is loosened, tamped, and seeds are put in a small surface depression. Seeds are barely covered with soil and then with a 4-inch square of paper. The paper is covered with ½-¾ inch of mineral soil, which is firmed and gently raked. The operation takes 30-45 seconds. The paper keeps animals from scenting the seeds and reduces evaporation from the soil. Several kinds of pines have shown good survival even under adverse weather conditions. If birds tend to nip off emerging seedlings, the seed spot is protected by a cone of screen attached to a stake that is driven into the ground.

Little, Silas, Jr. (NE For. Exp. Sta., Upper Darby, Pa.) PRESCRIBED BURNING AS A TOOL OF FOREST MANAGEMENT IN THE NORTHEASTERN STATES. Journal of Forestry 51(7): 496-500. July 1953.
Prescribed burning is recommended for management and maintenance of pine stands in New Jersey and eastern Maryland. Its varying effects are discussed.

McCormack, James F. FOREST STATISTICS FOR CENTRAL GEORGIA, 1952. U. S. Forest Service, Southeastern Forest Experiment Station (Asheville, N. C.), Forest Survey Release no. 40. ii + 44 p., map and graphs. July 1953.

Moravets, F. L. FOREST STATISTICS FOR PACIFIC COUNTY, WASHINGTON. U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station (Portland, Ore.), Forest Survey Report no. 109. iii + 25 p., map and graphs. June 1953.

PROCEEDINGS LAKE STATES FORESTRY CLINIC ON USING CHEMICAL CONTROLS IN FOREST MANAGEMENT, FEB. 10 & 11, 1953. U. S. Forest Service, Lake States Forest Experiment Station (St. Paul, Minn.), Miscellaneous Report no. 21. ii + 68 p. 1953.
Twenty papers discuss chemical control of brush and trees in the Lake States and the equipment, techniques and problems involved. Fifty references.

Richards, P. W. THE TROPICAL RAIN FOREST. Cambridge University Press, N. Y. 450 p., illus. 1952. $12.50. [From review by L. R. Holdridge, Journal of Forestry 51(6).]
Ecological description and analysis of the tropical rain forests of the world. "...will be a standard reference for many years and should constitute a real stimulus to additional ecological research in the tropics."

VEGETATION--FOREST--Continued

Wray, Robert D. FOREST STATISTICS FOR WEST VIRGINIA. U. S. Forest Service, Northeastern Forest Experiment Station (Upper Darby, Pa.), Forest Statistics Series: West Virginia nos. 2-8. Each number has ii + 16 p., map. 1953.
These 7 separately published numbers cover the state as follows: No. 2, Eastern Panhandle. No. 3, Eastern Section. No. 4, Southeastern Section. No. 5, Southwestern Section. No. 6, Western Section. No. 7, North-Central Section. No. 8, Northern Section.

VEGETATION--PASTURE AND RANGE

Biswell, H. H., A. M. Schultz, D. W. Hedrick, and J. I. Mallory. (U. of Calif. at Berkeley.) FROST HEAVING OF GRASS AND BRUSH SEEDLINGS ON BURNED CHAMISE BRUSHLANDS IN CALIFORNIA. Journal of Range Management 6(3): 172-180, graphs. May 1953.

Cassady, John T. BURNING MAY REDUCE GRASS PRODUCTION. U. S. Forest Service, Southern Forest Experiment Station (New Orleans, La.), Southern Forestry Notes no. 85. p. 2. May 1953.
"On an experimental range in central Louisiana, burning for two consecutive years reduced grass production during the second year by 42%. The range is in the longleaf pine belt, and slender bluestem is the dominant grass. The tree stand is sparse. ...measurements were made on ungrazed plots and included only green grass."

Etter, Alfred Gordon. BLUEGRASS PASTURE ALMANAC. Annals of the Missouri Botanical Garden 40(1): 1-31, illus. Feb. 1953.
A companion study to the author's "How Kentucky Bluegrass Grows" (see WR 67:40). It gives a month by month account of how Kentucky bluegrass and associated plants react to weather and animals in Missouri, and of how, in turn, livestock, rabbits, gophers, mice, and various invertebrates react to bluegrass and its associates.--Neil Hotchkiss.

Garrison, George A. (Pacific NW For. & Range Exp. Sta., Portland, Ore.) ANNUAL FLUCTUATION IN PRODUCTION OF SOME EASTERN OREGON AND WASHINGTON SHRUBS. Journal of Range Management 6(2): 117-121, graphs. March 1953.
Because of variations in weather and in rodent and insect damage, forage production was 3-5 times greater in some years than others.

Humphrey, R. R. (U. of Ariz.) THE DESERT GRASSLAND, PAST AND PRESENT. Journal of Range Management 6(3): 159-164, illus. May 1953.
Author's summary: "A study of historical and vegetational data points to the conclusion that the desert grassland of the southwestern United States and northern Mexico is not a true climax. Rather, it is a subclimax maintained by fire. Today, with fires largely a thing of the past, the true climax of low trees, brush, and cacti, with an understory of grasses and low-growing shrubs is developing extensively on areas that were once grassed."

U. S. Forest Service. LIST OF PUBLICATIONS, ARTICLES, PROCESSED AND OTHER RELEASES ISSUED BY RANGE RESEARCH DURING THE 10-YEAR PERIOD 1942-51. Mimeo. release 1787. 58 p. Sept. 1952. [From Journal of Range Management 6(2).]

Williams, John S. (U. of Houston.) SEASONAL TRENDS OF MINERALS AND PROTEINS IN PRAIRIE GRASSES. Journal of Range Management 6(2): 100-108. March 1953.
Study made on upland true prairie near Lincoln, Nebraska.

VEGETATION--WET-LAND

Dansereau, Pierre, and Fernando Segadas-Vianna. ECOLOGICAL STUDY OF THE PEAT BOGS OF EASTERN NORTH AMERICA. I. STRUCTURE AND EVOLUTION OF VEGETATION. Canadian Journal of Botany 30(4): 490-520, illus. July 1952.
Distinguishes bog from marsh or swamp in its physiography, physical conditions, chemical conditions, vegetation, and fauna; describes plant communities and succession in eastern Canada.--Neil Hotchkiss.

Martin, A. C., Neil Hotchkiss, F. M. Uhler, and W. S. Bourn. (US F&WS.) CLASSIFICATION OF WETLANDS OF THE UNITED STATES. U. S. Fish and Wildlife Service, Special Scientific Report: Wildlife no. 20. 1-14 p., maps. June 1953.
A simple classification designed to speed survey work and to make records of different workers comparable. The types of wetlands recognized are designated by number; anyone who so desires can use a finer breakdown and an expanded numbering system. Each type is briefly described, its regions of occurrence are stated and mapped, its vegetation is outlined, and its wildlife value is sketched. The 20 recognized types fall into 4 major groups: Inland Fresh, Inland Saline, Coastal Fresh, and Coastal Saline. Inland Fresh, for example, is divided into: 1. Seasonally Flooded Basins or Flats. 2. Fresh Meadows. 3. Shallow Fresh Marshes. 4. Deep Fresh Marshes. 5. Open Fresh Water. 6. Shrub Swamps. 7. Wooded Swamps. 8. Bogs.

Nicholson, William R. (Md. Game Comm.) MARSH TYPES FOUND IN MARYLAND. Maryland Conservationist 30(2): 6-9, illus. Summer 1953.
Types recognized are: cattail aquatic, three-square cattail, three-square, mixed brackish-marsh, needle-rush saltmeadow, and saltmarsh. Each type is briefly characterized, and its approximate acreage and areas of occurrence are stated.

LAND, SOILS, WATER, AND CLIMATE

Brittain, Robert. LET THERE BE BREAD. Simon and Schuster. xi + 243 p. 1952. $3.00. [From review by K. F. Mather, American Scientist 41(3).]
States the case for technical advances making it possible for the Earth to support at least 4 billion people "in decency and comfort."

Dils, Robert Earl. CHANGES IN SOME VEGETATION, SURFACE SOIL AND SURFACE RUNOFF CHARACTERISTICS OF A WATERSHED BROUGHT ABOUT BY FOREST CUTTING AND SUBSEQUENT MOUNTAIN FARMING. Ph. D. thesis, Michigan State College. 216 p. 1952. [From long abstract in Dissertation Abstracts 13(2).]
Study made on U. S. Forest Service's Coweeta Hydrologic Laboratory in North Carolina. "...cutting the forest cover from steep slopes and applying mountain farming practices to the land has a deleterious effect on the water resource, soil-water relations, and on the quality and quantity of the vegetal cover."

Geiger, Rudolf. THE CLIMATE NEAR THE GROUND. Translation by Milroy N. Stewart and others of the second German edition of "Das Klima der bodennähen Luftschicht," with revisions and enlargements by the author. Harvard University Press. xxii + 482 p., illus. 1950. [From long review by Marie Sanderson in Quarterly Review of Biology 28(1).]
"...provides an excellent and much-needed textbook of microclimatology for the use of the foresters, agriculturists, and entomologists, as well as for climatologists. It supplies a comprehensive study of the German and European research in microclimatic and allied fields, and the detailed bibliography clearly outlines the source materials." "The second part of the book concerns the microclimate in its relation to topography, and to plants, animals and man." Includes much information on instrumentation and methodology, and discussions of microclimate of many types of habitats.

Henry, E. F., and others. SOIL SURVEY OF LEE COUNTY, VIRGINIA. U. S. Soil Conservation Service, Series 1939, no. 17. 1-182 p., illus. June 1953. $2.25 from Superintendent of Documents.

LAND, SOILS, WATER, AND CLIMATE--Continued

King, Thomson. WATER. Macmillan Co., N. Y. 234 p. 1953. $3.50. [From review by P. H. Young, California Fish and Game 39(3).]
"As a nontechnical work, 'Water' should take its place among the more important books devoted to conservation. It should also be a welcome addition to the library of those who prefer awesome fact to plain fiction." "'Water' is basically concerned with conservation, but is written in a style that avoids the pointed lessons of many conservation books." The reader "will encounter page after page of amazing information" and "should be moved toward conservation from admiration of the qualities of water alone. A small section of the book is devoted to a discussion of this problem."

Lounsbury, Clarence, and others. SOIL SURVEY OF TIOGA COUNTY, NEW YORK. U. S. Soil Conservation Service, Series 1939, no. 20. 1-133 p., illus. June 1953. $2.00 from Superintendent of Documents.
Includes large folding maps and description of the county and its agriculture.

Rogers, Nelson F. STRIP-MINED LANDS OF THE WESTERN INTERIOR COAL PROVINCE. University of Missouri Agricultural Experiment Station (Columbia), Research Bulletin 475. 1-55 p., illus. May 1951.
This province is in Oklahoma, Arkansas, Kansas, Missouri, Nebraska, and Iowa. The paper describes strip-mining and discusses the stripped lands in regard to topography, texture, acidity, nutrients, weathering, and plant cover. Use of these lands for pastures, fruit and berry growing, and forestry are described, with special analysis of forest values. Wildlife and recreational values are discussed briefly.

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AVAILABILITY OF BACK ISSUES OF WILDLIFE REVIEW

The appeal for back issues of WR brought an excellent response from many people. We are sincerely grateful to each contributor. Members of the U. S. Forest Service staff deserve special mention for the numerous issues they returned. Contributors will be glad to know that a number of sets have been completed and that many other sets have been extended greatly.

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